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AUTHOR Haring, Norris G.
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ABSTRACT

Presented is the final report of a program designed to train regular classroom teachers as special education resource teachers to manage the academic and social behavior problems of moderately handicapped children and act as resource teachers to the regular classroom teachers. It is noted that the project emphasized precision teaching, a process of behavior change based on behavioral methodology. Sections cover a description of precision teaching and outlines of exercises used in the 16-week intensive teacher training sequence. Included are examples of individual student project reports. Sample behavior charts and referral forms are appended. (IM)

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A Project to Provide Additional Education for Experienced Teachers to Improve Learning Conditions for Handicapped Children in Regular Classrooms

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Final Report
1969-1971

Dr. Norris G. Haring
Project Director

University of Washington
Experimental Education Unit
Child Development and Mental Retardation Center
Seattle, Washington 98195

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Department of Health, Education, and Welfare
U. S. Office of Education
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TABLE OF CONTENTS

Introduction---------- 1
Resource Teacher--Why?---------- 4
Rationale for Training Sequence---------- 6
Population Served---------- 7
The Basis for the Training Program: Precision Teaching---------- 8
The Training Program--Precision training for
Precision Teachers ----------19
Training Exercises--Sixteen Weeks' Intensive Training ----------20
Exercise 1----------20
Exercise 2----------21
Exercise 3----------21
Exercise 4----------21
Exercise 5----------22
Exercise 6----------23
Exercise 7----------23
Exercise 8----------24
Exercise 9----------24
Exercise 10---------- 25
Exercise 11----------25
Exercise 12----------26
Twenty Week "Re-entry Phase"--Training Sequence----------27
Procedures----------27
Examples of Individual Student Project Reports
Example 1----------31
Example 2----------32
Example 3----------35
Example 4----------38
Example 5----------39
Example 6----------42
Example 7----------47
Example 8----------50
Sample Referral Form----------54-55
Discussion ----------56
References ----------59

In 1969, the Bureau of Educational Personnel Development funded a project to be carried out in one rural, one suburban, and one urban school setting in the state of Washington under the direction of the Experimental Education Unit, Child Development and Mental Retardation Center, University of Washington. The purpose of the project was to train regular classroom teachers as special education resource teachers--teachers who would return to a natural school setting after their training and who would not only manage the academic and social behavior problems of the moderately handicapped children in school, but who would act as resource teachers to the regular classroom teachers there. By providing teachers with special assistance in managing these problems, school districts might be able to maintain students with less profound degrees of retardation or emotional disturbance in regular classrooms.

Three school districts--Monroe, Clover Park, and Seattle (Asa Mercer Junior High School)--referred teachers to be trained in this program. At Monroe, the rural district, the training phase concentrated on team teaching for mentally retarded elementary and middle school children. Teachers who returned to classrooms worked with mentally retarded children and with those who had academic and behavior problems. At Asa Mercer Junior High, the urban school, were disadvantaged minority students whose serious behavior problems were manifested by their dropout or suspension status. Clover Park is a sub-urban school district; five elementary schools there were served by trainees

in this program. In the project's first year a total of 5 teachers were trained for the Clover Park District--four (G. Evanson, E. Jarvis, J. Osborn, and E. Osborne) at BEPD expense, and one (M. Gustin) at Clover Park School District expense; four teachers for the Monroe District (W. Whisnant, N. Easton, R. Dow, and J. Begley); and two (S. Reed and S. Greene) for the Seattle District. In the project's second year, six new trainees were concentrated at Clover Park (P. May, J. Pelander, E. Willis, and D. Hudson) and at the Experimental Education Unit (L. Busse and D. Gentry). In addition, there were two teacher aides trained at Monroe (M. Madche and E. Young) and one (V. Look) at the Experimental Education Unit. The continuation of the project is now underway at a junior high school in suburban Mercer Island, where we are training teacher aides.

Handicapped children (the mentally retarded, hearing impaired, speech impaired, visually handicapped, seriously emotionally disturbed, crippled or health impaired) account for approximately ten percent of the school-age population of the United States. And yet, less than half of the nation's 6 million school aged and even fewer preschool handicapped children are receiving special educational services, and at least 245,000 additional professional personnel need to be trained to work with handicapped children (Martin, 1972). In the state of Washington in 1967, a total of 23,892 children in 115 school districts were identified as needing either special class placement or itinerant teacher services. To meet the needs of these children would have required approximately 273 additional classrooms and 371 additional teachers (State of Washington, 1967). The demand for services

far exceeds the supply of facilities and trained personnel, and many regular classroom teachers find themselves faced with the problem of dealing with the special needs of handicapped children in their classes. This is not necessarily a bad situation. There seems to be no clear-cut evidence that special class placement for handicapped children leads to higher academic achievement or social adjustment than does placement in regular classes (Sparks & Blackman, 1965; Siegel, 1969); and Haring, Stern & Cruickshank (1957) have shown that regular teachers show positive attitudes toward handicapped children when they are given information and materials for the education of these children. But information and training in special procedures and instructional materials must be presented systematically. It is at this point that the resource teacher can make a significant contribution.

The resource teacher would not only benefit the financially-pressed education system by eliminating the need for certain self-contained special education classes, but would spare the mildly handicapped student the added stigma and disruption of removal from his regular class to a special placement.

Over half the children designated as having special learning or behavior problems are classified as functionally mentally retarded. Of this population, statistics reveal that about 75% are mentally retarded from socio-environmental reasons--a group identified as mildly retarded and very capable of acquiring basic academic skills as well as of making adequate social adjustment, if the community setting is appropriate.

How appropriate a community setting is a special class? The opportunities for intellectual stimulation are diminished when the only model of elevated functioning is the teacher. If indeed the children's retardation comes about

because they are in deprived environments, then to replicate that deprivation in their official learning situation compounds the problem.

Resource Teacher--Why?

We have already discussed the importance of keeping moderately handicapped children in regular classrooms wherever possible. Often these children have such highly individualized learning problems that the teacher may be required to pinpoint the problem and to select or develop appropriate instructional materials for remediation. At the same time, the teacher will need to handle the behavior problems that often accompany learning problems. The ordinary classroom teacher ideally would be able to handle these problems as well as manage the regular instructional program of the classroom. The fact that teachers have often found it difficult to do so is shown by the rise of special education as a discipline and the impetus to put problem students in special classes. While, as we have said, this has not always been an ideal solution to the children's problems, simply asking teachers to retain these pupils in regular classrooms without special help places an intolerable burden on the teachers. The resource teacher can be seen as an itinerant special assistant to teachers who have students with "exotic" problems. An analogy might be drawn between the resource teacher and the medical specialist: both are trained to have expertise in particular areas and to have responsibility for those who require that special skill. Both work with the general teacher or practitioner to provide a program of total care for the populations they serve. Until such time as we can make specialists of all teachers--that is, provide all teachers with the skills to cope with the widest range of educational problems--we think that the resource teacher is a necessary and economical interim solution to a serious problem.

The problem itself may become more critical if, as states begin to implement legislation providing education for all children--including those with all degrees of handicap--special classes are forced to accommodate the more seriously handicapped children and, therefore, are pressured into finding room in regular classes for those borderline children they now handle.

Another source of pressure is the contemporary call for accountability. There is more and more pressure on teachers to produce demonstrable gains in their classes. Yet teachers who lack the means to meet these demands--for whatever reasons--cannot be abandoned to failure. If the teacher's professional training has not already equipped him with the requisite skills, the profession has an obligation to train or assist him to meet these increased expectations.

> The teacher should be made to realize that others on the team are prepared to help him if he is having difficulties in managing the behavior problems and academic deficits of his students.
>
> . . .
>
> Accountability should involve a team approach in which all members, and not merely the teacher alone, are responsible. Otherwise, each problem escalates, creating a more complicated problem in which parents, administrators, and teachers have only extra work to do instead of relieving one another of aspects of the burden. In other words, given the fact that there are problems, a mature approach would emphasize solving the problem cooperatively rather than giving red marks for failure to those who are beset by difficulties. [Hayden & Haring, 1972, pp. 436-437.]

According to recent statistics (Martin, 1972) the number of teachers trained in special education is woefully inadequate. Many of those functioning in special education classes are not even certified specialists.

Once again, trained resource teachers can provide necessary assistance to such teachers: they can not only work directly with children who have learning problems, but they can also train regular classroom teachers to use the skills they have acquired.

Rationale for Training Sequence

"As early as 1968, Bloom pointed out that 'to develop mastery in each student's learning, teachers must be able to recognize when students have attained it. One necessary step in this direction is to specify the objectives of instruction in terms of skills (content as well as cognitive processes) the student is expected to learn.' " (Block, J. H. [Mastery Learning] 1971, p.67)

Simply stated, this means that in order for a teacher to know that he has transmitted a skill, a student must demonstrate that skill--he must act, do, perform. Learning by doing is the governing principle we adhered to in designing a training program for resource teachers. It is possible to master all the contents of a driver's manual, and to know the rules of the road, but actually knowing how to operate a vehicle demands more than merely intellectual understanding. So, too, being able to face a classroom of children and having the skill to help any one of them requires supervised practicum experience.

We are discussing a training program that builds on the usual student-teaching experience in several ways. On the basis of previous experience in training special education students and other resource teachers, the program staff had agreed on certain terminal objectives for each trainee--that is, the trainees were to acquire skills in setting behavioral objectives, taking continuous performance measurements, applying reinforcement principles to

manage behavior, individualizing instruction, and programmed teaching. As with any training program, the success of this program depended on a clear definition of terminal objectives because they represent the skills that the trainees must acquire as they train. Clearly defined terminal objectives made it easy to evaluate the program's success at the end; they were also useful for formative evaluation, enabling the trainees and the trainer to know at any time how far the trainees had progressed toward acquiring the specified skills. Further, the trainer could alter the program to assist the student in difficulty. The meaning of an individualized program is that it changes to meet the needs of the student as he progresses through it. A prerequisite for that alteration is a knowledge of what needs to be changed. The following discussion of the training program will explain in detail the rationale for any particular steps or procedures in the sequence.

Population Served

The training sequence carried out at one of the three project settings--the suburban Clover Park School District--and at the University of Washington is an example of the applicability of precision teaching techniques (to be discussed in detail below) to the training of skilled teachers. The training sequence varied slightly at each of the three project locations, but the Clover Park experience exemplifies the procedures well and stands as evidence of the workability of the training project. Furthermore, the population in the Clover Park District is particularly worth discussing. Clover Park has a highly transient, military-impacted population with an unusual concentration of children having academic and social behavior problems; the children had a wider range of handicaps than did children in other project schools.

Most of the target children at Clover Park exemplified a critical national problem--the moderately handicapped child in the regular classroom. If, as we have noted, 75% of the retarded children in this country belong to the group of mildly retarded or handicapped students, then any success in improving their instruction is of particular interest. The finding (Deutsch, 1965) that culturally deprived children display a cumulative deficit wherein early small deficiencies lead to inferior learning that, in turn, increases the size of the deficiency, underscores the need to alleviate the learning problems of these children as early as possible. If these problems are not attended to, the child faces a difficult adjustment as an adult. Edwin Martin (1972) estimates that "Only 21 percent of handicapped children leaving school in the next 4 years will be fully employed or go on to college. Another 40 percent will be underemployed, and 26 percent will be unemployed. An additional 10 percent will require at least a partially 'sheltered' setting and family, and 3 percent will probably be almost totally dependent."

The Basis for the Training Program: Precision Teaching

For those readers who are unfamiliar with the training philosophy and procedures followed in this program, a discussion of precision teaching--what it is and how it differs from traditional methods--may be useful.

Some past teachers have defined the goal of the teaching process as "providing the student with exposure to a wide range of information and experience"; or, as making sure that his school experience makes him a "well-adjusted, mature adult." These definitions have two major flaws:

a. They do not specify precisely what information and experience should be provided, or what observable symptoms of "adjustment" and "maturity" will tell the teacher that his efforts have been successful;

b. They do not identify any specific procedures or steps that the teacher should follow in order to reach the goal.

If for no other reason than the practical one of offering more guidance to the teacher, one could wish for a definition of teaching that specified exactly the goal or purpose of the teaching act, and the specific steps to be followed in carrying it out. In fact, such a definition has been implicit (at least) for years: All teaching involves a series of acts whose purpose is to change a pupil's behavioral repertoire from a state of relative incompetence to one of relative competence. "For centuries schools have accepted the fact that they must change their students (e.g., change them from 'non-readers' to 'readers'; from 'non-adders' to 'adders')...." (White, 1971, p.5)

It is true that some teachers and some schools in the past (perhaps even a few in the present) have felt that teaching was strictly an either/or matter of presenting the material to be learned: whether the pupil did change his behavior sufficiently to acquire the information or skills the teacher presented was due more or less to the pupil's own "motivation" or "interest"; but things have been changing. As the critical role of the environment in determining the behavior of individuals has become more and more evident (see, for example, Skinner, 1971: Beyond Freedom and Dignity), teachers and schools have become more and more convinced of the need to manipulate the instructional environment in order to change the behavior of their pupils.

If the environment is maintaining a given behavior in a student, then it makes sense to change the environment if a change in behavior is desired. And, if teaching is concerned with changes in behavior in this sense, it cannot be a black-or-white, on-or-off process: it is a matter not only of presenting or not presenting material, but of presenting it more or less well, and with appropriate environmental alterations, for promoting specified changes in pupil performance. At present, we are less inclined to place "responsibility" for learning within the student and are more inclined to view teaching as a process by which the teacher arranges the environment to make learning more likely. The teacher of today is, then, in the "hot seat" so far as learning goes: the teacher is the one most likely to be held responsible for how well or how much his pupils learn.

How is the teacher to reach the goal of making learning more likely--or even inevitable? The answer to this question cannot really be given until another question has been asked and answered: namely, the question "What is the goal?" Until the teacher knows exactly where he should be when he is at the end of his travels, he is in no position to map out a route for getting there.

The first problem, then, is to specify exactly what OBSERVABLE BEHAVIORS will be accepted as evidence that learning has indeed taken place. (Mager, 1962) The condition of being knowledgeable or being mature has no precise meaning until the "symptoms" of these conditions have been specified so as to leave no doubt about them: a student has a "knowledge of German," for example, if he can translate without help passages of unfamiliar German prose at a rate of 100 words per minute. This specification might not suit every German teacher; nevertheless, it serves as a model of exactitude which every German teacher might use in setting his own specifications.

We said earlier that teaching is concerned with changing behavior; and we have just insisted that in order to change a student's behavior--or, rather, to know what will constitute a change in his behavior--we must specify what OBSERVABLE BEHAVIORS will constitute evidence that a change has taken place. But that criterion is only partially satisfactory, since it is possible that the student may already exhibit the criterion behaviors; teaching in such an instance could hardly be said to change anything. So, teaching must really have more than one measurement if it is to know exactly how successful it has been. At the very least, the teacher must know exactly what the student was able to do before the course of instruction begins, and what he is able to do after it.

If the teacher waits until the end of a course before evaluating his methods' success, he has obviously waited too long. The students for whom the methods were used will be gone and the new students may or may not profit from any alterations the teacher decides to make as a result of this year's tests. In any case, the teacher who relies exclusively on "BEFORE and AFTER pictures" of teaching effectiveness is in the position of perennially closing the barn door after the horse is stolen. What the teacher needs, clearly, is an ONGOING measure of his effectiveness which will permit him to alter unsuccessful methods or materials while the student is still able to profit from such alterations.

Now we can specify a definition of precision teaching: it adds to the old, familiar term "teaching" a new adjective; the adjective signifies precision and accuracy in measuring progress toward the goals of instruction. And the novel "methods" of precision teaching are not really methods in the usual sense at

all: rather, they are tools by which the teacher can measure the effectiveness of any methods he is now using or may adopt in the future.

Ogden Lindsley has recently remarked that "...precision teaching is not an approach to classroom instruction. Any teacher who is now comfortable with her style of teaching, her hard learned way of communicating with her students, and the unique way she expresses her love for her students would not substitute precision teaching for what she is doing. She simply adds precision teaching techniques to her current style in order to become even more efficient. Precision teaching tools are designed to improve and refine current teaching methods and materials.... Precision teaching simply adds a more precise measurement instrument to present teaching, making teaching more economical, more effective, more enjoyable, and more loving." (Lindsley, 1971, p. 119)

We now have two guidelines for a training program:

a. Teaching is a process of changing behavior.

b. In order to know that the teaching process is effective, a teacher must have precise measurement of the success of the steps in the process.

But a teacher, after following the argument thus far, is likely to stumble over a practical problem at this stage: because while he may agree that precise measurement of a behavior is necessary if a change in behavior is to be accurately detected, he may justifiably wonder how such measurement can be carried out. After all, measurement involves such notions as quantity or intensity or frequency: and whereas we can measure distances or temperatures because men generally agree on the basic units of such measurements--namely, inches or centimeters; degrees Centigrade or degrees Fahrenheit--who is to say what the basic unit of measurement for a behavior is?

Owen White (1971) points out that a first consideration in talking about a measure of behavior is specificity. While "angry behavior" might refer to a whole range of actions such as glaring, stabbing, name-calling, and so forth, the specific actions themselves have fairly well-understood and precise meanings. Therefore, when we talk about behaviors, we should be careful to talk only about a specific action such as hitting that everyone can see and understand.

Having specified the behavior of "hitting" we now must specify some measurement for it in order to assess its present status and future changes. As White says, we might talk about changes in intensity ("He was hitting 'hard'"; now he is "hitting 'softly'"), but, again, we have a problem: What is hard? What is soft? There are, of course, ways to measure the force of a hit, but "they're just too clumsy for the teacher in a classroom to bother with."

An alternate measure of hitting behavior is the measure of the frequency of it: How often in a given time period the behavior of "hitting" is exhibited. The use of frequency as a measure of behavior has been called "Skinner's greatest discovery" (Lindsley, 1971, p. 116), and it has several advantages.

a. The measure of how often something occurs avoids some of the problems raised by qualitative measures or intensity measures; if we say that a student hit ten times yesterday and five times today, we have a measure that is both easy to take and easy to interpret.

b. The measure is appropriate for measuring change in any behavior which involves observable action that has a definable beginning, definable end and is repeatable and voluntary. Such behavior is called a

movement cycle (Cohen, Gentry, Hulten, & Martin, 1972). It is important that the behavior specified for change be repeatable, since an action that could not occur more than once is not susceptible to change. At least, it would be impossible to measure a change, since measurement presupposes at least two data points. Generally, however, frequency is highly appropriate as a measure of classroom behaviors such as reading words, writing letters of the alphabet, adding numbers correctly, spelling words correctly, and so forth, which occur over and over again.

Now we have a basic unit of behavior, or a means of determining a basic unit for any behavior we can measure in terms of frequency: the movement cycle unit. But what about our time unit? We may measure a behavior's frequency in terms of seconds, minutes, hours, days, weeks, and so on...which is most useful? MOVEMENTS-PER-MINUTE is a measure teachers have so far preferred; it is probably helpful because few classroom behaviors are repeatable several times per second, whereas literally hundreds may occur in a single hour, and the movements-per-hour count would be too gross an indicator.

Movements-per-minute may sound frightening to a teacher who contemplates the prospect of counting movements-per-minutes for each of a dozen or two dozen children; but, in practice, children in a classroom are able to take over most of the burden of recording and even, in some cases, of charting, their own behaviors. (Bates & Bates, 1971)

With the information gained from measuring movements-per-minute, or RATE, the teacher knows a bit more than he knew when he had only knowledge of the total number of movements. For example, if Mary does ten addition problems correctly whereas John does 100, can the teacher say which student is better

at addition? Suppose Mary had only one minute to work while John had four hours? If the teacher knows the time available for working, he can adjust his estimates accordingly. Knowing that Mary can work problems at a rate of ten correct and no error problems per minute while John requires almost two and a half minutes to work even a single problem correctly, the teacher has quite a different picture of their abilities.

RATE, then, is a way of measuring behaviors that involves specifying the time spent counting. It is calculated as the number of movement cycles divided by the number of minutes spent counting. Using RATE as a measure, the teacher can measure everyone by the same "ruler" (White, 1971, p. 4)--how much happens in one minute.

To record these measures, the teacher or pupil will need a standard for charting just as he needed a standard for measuring; Ogden Lindsley and his colleagues found that when each teacher used his own method of charting, the number of different charts equalled the number of different teachers. In meetings, a teacher required some 20 or 30 minutes to make his chart clear to the others; using the Standard Behavior Chart,* the teachers now take only 2 or 3 minutes to share a single project. Further, "The six cycle design of the chart provides an adequate range of behavior. Behaviors which occur once a day as well as those which occur as frequently as 1,000 times per minute can be charted. This feature...insures that the types of behaviors teachers would tend to measure are not biased by the nature of the chart." (Lindsley, 1971, p. 117)

There is a second advantage to this chart: it permits the teacher to view the TREND of progress after a minimum of calculation. "Since equal percent

*Chart paper produced by Behavior Research Company, Box 3351, Kansas City, Mo. 66103.

gains get equal distance on the standard chart, you can project the future course of behavior by drawing a straight line through the middle of the frequencies you've charted. The direction of this line shows whether the frequency of performance is increasing, decreasing, or remaining the same." (Lindsley, 1971, p. 116)

The method for determining the TREND or LINE-OF-PROGRESS or the SLOPE of a 'celeration line is simply to find a straight line which can be drawn through most of the data points: the best "fit line" through the data points will point "up" or "down" or will be completely horizontal (a maintenance trend line). In gross terms, anything after "noon" and before "three o'clock" is an acceleration trend while anything after "three o'clock" is a deceleration trend; at exactly three, it's a maintenance trend.

When a teacher charts a student's trend line, or line of progress, he has a sophisticated means for comparing the student's present performance to his past performance, and for examining the effectiveness and efficiency of his teaching. That is, he can determine whether specific interventions have sufficiently brought about desired change--increases or decreases--in the student's rate of behavior. "This statement of the exact trend line or line of progress...serves to quantify the amount of increase or decrease. ...using the semi-log graph paper, the quantification is in terms of a multiplying or dividing factor." (Cohen et al., 1972, p. 283) For instance, a student whose trend line is "X2.0" (read: times two) is now performing at twice the rate of his performance last week. He may be reading twice the number of words per minute, or he may be kicking his classmates twice the number of times he kicked them last week. On the

other hand, if he has a ÷ 2.0 trend (for this decelerating trend, read: divide by two), he is reading words--or kicking classmates--half as often as he did the previous week. A maintenance trend--the straight line indicating that there has been no change in behavior rate--is expressed as a x1.0 trend.

Cohen et al. (1972), in an extended discussion of teachers' use of trend analysis, acknowledge "the benefits of looking for a trend or line of progress in determining the total effect of teaching or management changes." (p.288) For instance, analysis of a student's trend yields finer focus and more complete information concerning performance change than does a simple comparison of medians. To illustrate this difference, Cohen et al. discuss a student whose median correct response rates in basic multiplication facts change, in three phases of a study, from 6 correct responses per minute (with a x10.0 trend line), to 28 responses per minute (X4.0 trend line) to 38 responses a minute (X1.2 trend line). Teachers introduced an instructional change in Phase II and a reinforcement contingency in Phase III.

Although it is obvious that the student's median rate rose dramatically during the study,

> ...The interesting fact is that the line of progress deteriorates over the three phases. In Phase I it was X10.0. In Phase 2, when the teacher-made program was initiated, the trend was X4.0. When the computer was used as a reinforcer the line of progress was only X1.2. Here again there is evidence that, although the medians were significantly different, the trends became increasingly lower. The suggestion here is that the two phase changes utilizing the teacher-made program as an adjunctive drill exercise and the computer as a reinforcer may have slowed the student down rather than served to maintain the acceleration shown in Phase I. [Cohen et al., 1972, p. 294]

The capacity to measure exactly how often a given behavior occurs each minute, and to record those measurements in easily charted form that others can understand at a glance is a valuable capability. A teacher can know at any time--and not just at the end of a six weeks' test or an entire course--how well the student is progressing; and if he is careful to introduce only one instructional change at a time, and to indicate exactly when he introduced it, he can also know to what instructional procedures or motivational changes the improvements in student performance are due. He has these objective data on which to base his decisions, and he is therefore likely to make better ones.

Summary. The advantages of precision teaching, then, are several. Not only do precise, ongoing measures of the child's performance give the teacher information about which instructional measures have been successful, but the slope of the line-of-progress, when extended at the same rate into the future, can also tell him what the success of these measures will be. And while these measures would be difficult and time-consuming for the teacher to carry out by himself, they are simple enough that kindergarteners and first-graders can chart their own data. (Bates & Bates, 1971) Another benefit is that the very process of involving the child in measuring his own progress may be rewarding to him, and will surely lead to his better understanding of the contingencies in his environment--of the connections between his behavior and its consequences. A child who can understand that much is in a better position to take over the management of his own behavior. Ultimately, all teachers agree about one goal of instruction: making the child independent of a teacher, able to function without instruction. Because precision teaching promotes that goal, it represents a valuable addition to traditional instruction.

The Training Program--Precision Training for Precision Teachers

The resource teacher must know first of all how to teach. As elementary as that may sound, this requirement seems to be overlooked in many instances where "specialists," who often have no classroom experience, help teachers. In order to teach effectively, the resource teacher must be able to identify the sequence of skills that the child should acquire in order to reach a terminal objective. A teacher so trained will probably be able to generalize his skills from subject matter to subject matter, should the rapid changes in curricula students today are seeking make the ability to shift necessary.

The Clover Park trainees in the BEPD project were all elementary school teachers enrolled in master's degree programs at the University of Washington; their trainer, Hal Caufield, had been a Fellow in a similar federal training program* two years earlier, working in the Clover Park School District. At the end of their project training, they would return to their home schools as resource teachers. During the summer of 1969, they were given an intensive four-week supplementary didactic program that emphasized techniques of precision teaching, behavior management, instructional program planning, and performance recording and evaluation. (For a discussion of the topics covered see Analysis and Modification of Classroom Behavior and Precision Teaching which were in manuscript at the time of the project.)

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*The Application of Functional Analysis of Behavior By Teachers in a Natural School Setting. Project No. 7-0376, Grant No. OEG-0-8-070376-1857 (032), Department of Health, Education , and Welfare, U. S. Office of Education, Bureau of Education for the Handicapped. Project Director, Dr. Norris G. Haring, Training Coordinator, Dr. Thomas C. Lovitt, Experimental Education Unit, University of Washington, Seattle, Washington.

The critical phase of their training, however, was a 16-week supervised practicum experience in the Clover Park School District training sites. Had the resource teachers not had controlled practicum experience under the direction of an experienced trainer, they would have returned to their home schools as unpracticed apprentices. The staff preferred that trainees complete their practicum experiences during intensive training and then provide skilled service to their schools and to the children there.

Training Exercises--Sixteen Weeks' Intensive Training

Exercises 1 through 4 were designed to give the trainees practice in modifying a disruptive social behavior. Social behavior was first in the sequence because the child's behavior has to be under control before he can profit from instruction. Further, a social behavior that disrupts a class may be more readily identified and then remediated than an academic behavior deficit that requires the teacher to have programming and other skills.

Exercise 1

The trainees were to:

1. Select a grade level for observation in the training site school.
2. Observe classes, and identify a child with a high rate of two or three disruptive social behaviors.
3. In eight 15-minute observations, secure a frequency count of the problem behaviors.
4. Chart the behavior frequency data.
5. Present their findings at a meeting on the day after the last observation.

Exercise 2

The trainees were to:

1. Select, from information in Exercise 1, one behavior apparently causing the child most difficulty in adjusting to the classroom environment.
2. Conduct eight more observations, taking frequency counts of the behavior.
3. Chart observation data.
4. Be prepared to share their observation data.

Exercise 3

The trainees were to:

1. Offer, on the basis of baseline data (Exercise 2), at least three change tactic proposals to modify the disruptive behavior.
2. Discuss with the trainer which proposal the classroom teacher would probably approve.
3. Arrange with the teacher which tactic to institute, a time to institute it, and times for eight 15-minute observations during the time change tactic was in effect.
4. Conduct observations--recording the frequencies of the target behaviors.
5. Prepare to present findings on the day after the last observation.

Exercise 4

The trainees were to:

1. Continue to contact the classroom teacher to see that the target behavior remained under control--conducting observations to acquire the information, if necessary.

2. Proceed through the same steps as in Exercises 2 and 3 if control was not maintained or if another disruptive behavior appeared.

The skills required in Exercises 1 through 3 were the ability to:

-complete a plan sheet

-record (chart) data: counting, timing, charting, plotting trends, summarizing data

-analyze data

-develop change tactics after observation

-manage contingencies

-cooperate with teachers

If the trainee's tactic was unsuccessful in modifying the target behavior, he was required to develop another tactic and follow the same steps in Exercise 4. If the tactic was successful, the trainee proceeded to Exercise 5.

With Exercises 5 through 8 the trainees were to begin modifying academic performance. They were to:

Exercise 5

1. Confer with teacher and select for observation one child with very low academic ability.
2. Carry out assessment of his performance in mathematics, reading, and spelling, after developing an individualized assessment 'kit' from standardized tests, materials in the training center, or materials the trainee constructed himself.
3. Present findings on the day after the assessment.

4. Suggest at least one change tactic for each academic area assessed. (The suggestion would take the form of practical recommendations--measures the teacher could employ in class to help the child; mere relating of test scores to the teacher would not satisfy this requirement.)

Exercise 6

The trainees were to:

1. Select one academic area from those assessed in Exercise 5 for remediation.
2. Carry out detailed assessment of the child's performance, including conferences with teacher, to secure full information on the area selected.

Exercise 7

The trainees were to:

1. Develop an individualized program to help the child overcome his difficulty on the basis of the information gathered in Exercise 6 and programming skills acquired in didactic sessions.
2. Initiate the program in the classroom setting.
3. Collect data on the program's efficacy--using baseline data as a comparison for performance evaluation.
4. Teach the child to collect his own data, if possible.

Skills required for Exercise 7 were:

-programming

-program initiation

-data collection and charting

-teaching of self-recording to students (if possible)

-contingency management, and

-cooperation between the trainee and the classroom teacher (obviously important in all cases.)

Exercise 8

The trainees were to:

1. Follow-up on the program begun in Exercise 7 to see whether it was continuing to succeed.

2a. Initiate a program change and follow the steps of Exercises 7 and 8 again if the program was unsuccessful.

2b. Continue the program and data collection if the program was successful.

3. Be prepared to share the charted results of Exercises 4-8 after ten days.

The first eight exercises required the trainees to work with only one student at a time, first to modify a disruptive social behavior and then to remediate an academic deficiency. The staff believed that working with only one student at a time under the strict control of the trainer was a necessary introduction to more complicated intervention.

Beginning with Exercise 9, trainees were to work with a group of from four to six children in the training center school to remediate their academic difficulties in the group setting.

Exercise 9

Trainees were to:

1. Carry out a detailed assessment of each child as he entered the group.
2. Teach each child (if possible) to record his own data during the five-day baseline-data collection period.

3. Develop an individualized program for each child.
4. Initiate each child's program.
5. Monitor his success.
6. Initiate changes where indicated, or continue the program and data collection on the program's success where indicated.

As children in Exercise 9 began functioning successfully, trainees were then to:

Exercise 10

1. Move children (one at a time) back to regular classes.
2. Work with the regular teacher on continuation of the successful program; of the data collection to be carried out by the regular teacher or the children; and of the contingency management system in effect at the training site.
3. Schedule with the regular classroom teacher periodic observations to 'maintain' the child and the teacher for at least 20 days. (Maintenance was to include program changes where necessary.)
4. Present results of these observations at five-day intervals to the project trainer.
5. Present a report of the entire project at the end of these 20 days of maintenance.

Exercise 11

Trainees were to:

1. Arrange with the classroom teacher to institute the trainee-developed performance recording and contingency management program for an entire classroom in one academic area.
2. Introduce a group modification tactic to improve the class's performance in that area, after securing baseline data.

3. Assist the regular teacher to take over the managerial role in the project.
4. Continue data collection on the effects of the project.
5. Share the results of the entire project in complete report form at the end of the intensive training period.

Exercise 11 was a major task for the trainees, some of whom were faced with classes numbering 37 or 38 pupils: to institute a contingency management and performance recording system in such a class was the final evidence that the trainees were highly skilled resource personnel.

With Exercise 12, the trainees were at the end of their intensive training period, and to facilitate their assumption of the roles of resource teachers in their home schools during the 20-week "Re-entry Phase" of training, they were asked to:

Exercise 12

1. Compile a complete project report form.
2. Summarize (a) their own expectations for their future roles, and (b) one of their training projects for discussion at a faculty meeting to be held in their own schools the week following the intensive training period's end.

The reader will notice the emphasis on data-sharing skills in the training program. Resource teachers whose work will involve cooperation with a child's classroom teacher, and perhaps the child's parents, need to be able to explain not only the child's performance problems, but ways to remediate them. Further, to enlist the cooperation of others working with the child, the resource teachers must be able to explain the reasons for their procedures and often must teach

the others to take over portions of these responsibilities. During the entire training period, the project staff made many visits to the trainees' home schools to prepare administrators, teachers, and parents for the advent of the resource teachers. They wanted to familiarize the school with the functions the resource teachers could perform to aid the teachers and students, and also to enlist the cooperation of all concerned. Obviously, rapport between teachers and resource teachers would be necessary for a successful working relationship. The staff hoped to smooth the transition between training and working for everyone.

20 Week "Re-entry Phase"--Training Sequence

1. The trainees continued course work in special education master's degree programs at the University of Washington.
2. The trainees assumed more and more a full-time resource teacher role in their home schools, although they were under the continued "care" and "maintenance" of the project trainer.
3. The project trainer made two half-day visits per week to the resource schools.
4. The trainer continued collecting the same data on the trainees' performance that he amassed during their intensive training period.
5. The trainer continued adjusting the training program to meet the trainees' individual needs so that they would all meet terminal objectives of the project.

Procedures

When a child required intervention by a resource teacher, the regular classroom teacher consulted the resource teacher about remediating his problems.

The classroom teacher filled out a referral form that had been designed by the resource teachers. This form (sample included below) was written concisely and specifically to prevent any differences in interpretation. It covered reading, arithmetic, cursive penmanship, spelling, classroom behavior, and general testing; referrals could be made in any of these areas for remediation or enrichment.

In areas where a student showed deficits, the teacher could select the specific areas for remediation: for instance, in reading--oral reading, phonics, vocabulary, comprehension, and other teacher specified programs; in arithmetic--counting and writing numerals, addition, subtraction, multiplication, division, and other teacher-specified programs. The teacher could select as many areas for the student as he considered necessary to bring the student's performance to a satisfactory level.

The resource teacher used probes to assess the student's present level of functioning. (A "probe" might consist of a sample page of a reading text or math workbook.) The classroom teacher and the resource teacher then agreed on a criterion for a successful project. In the agreement they stated the specific terminal objectives for the student. After the student reached the goal, this contract was terminated. The teacher, however, had the option to "recontract" if the student needed work in other areas.

At the time of this agreement, the resource teacher scheduled weekly conferences to facilitate communication with the regular classroom teacher. At the conference, the teachers together evaluated the data displayed on the student's six-cycle graphs.

(Sample charts summarizing the performance data of students in math, social behavior penmanship, and reading are included below [pp. 31 & ff.]). They discussed changes in program, arranged events, reinforcers, contingencies, and the total learning environment. Through these conferences, the resource teacher attempted to convey an understanding of the student's abilities, the resource teacher's role and the procedures implemented.

Occasionally, the resource teacher worked with the child on a one-to-one basis in the resource room for part of the day. Occasionally, too, the resource teacher managed several children at a time in the resource room, or continued to provide individualized programs for children who remained in their own classrooms while working on them.

This program was different from the self-contained special education programs that most classroom teachers were used to. Formerly, teachers either managed a "problem child" themselves, using their accustomed methods, or referred him to another class. This program demanded changes in the regular teacher's behavior and therefore required tact and careful planning from the resource teachers. The goal of this program was two-pronged: the resource teachers were to use their training to meet the children's requirements and to train classroom teachers in the procedures they, the resource teachers, had learned in their own training. Clearly, if they alienated teachers, they would never have an opportunity to improve the performance of students or teachers.

The resource teachers were able to involve the regular classroom teachers in the project with minimal difficulty, however; partly this was true because of the resource teachers' tact and planning, and partly, too, because the regular

teachers had both a desire for new teaching techniques and, even more urgently, a desire for help in managing students with learning and behavior problems. The resource teachers helped them alleviate their present difficulties and learn to deal better with future ones. Sending the child to a special education classroom merely helped with the present moment's problems; it taught the teacher in the regular classroom nothing.

The following individual student project reports are examples of interventions carried out by the resource teachers in each of the following areas: academic subjects (math, reading, and spelling); and social behavior (talk-outs, hitting others, etc.)

Example 1--E. Osborne

Protege

John, eight year old second grader.

Target or Problem Movement Cycle

John did not exhibit the ability to add problems with sums less than ten.

Procedures

Teacher-made dittos were used to sequence the program. The first sheet included problems of the 0 + 0 and 0 + 1 classes. The second dittos were of the 1 + 1 and 0 + 2 classes. Each new sheet contained one or two new combinations. When a rate of thirty or more was maintained on one sheet, the next one was introduced. Each new sheet contained at least forty percent review of former sheets.

Each time John wrote more correct answers than the time before (on a sheet of the same class), he was allowed to use the date stamp on the top of the sheet. This reinforcer was chosen by John.

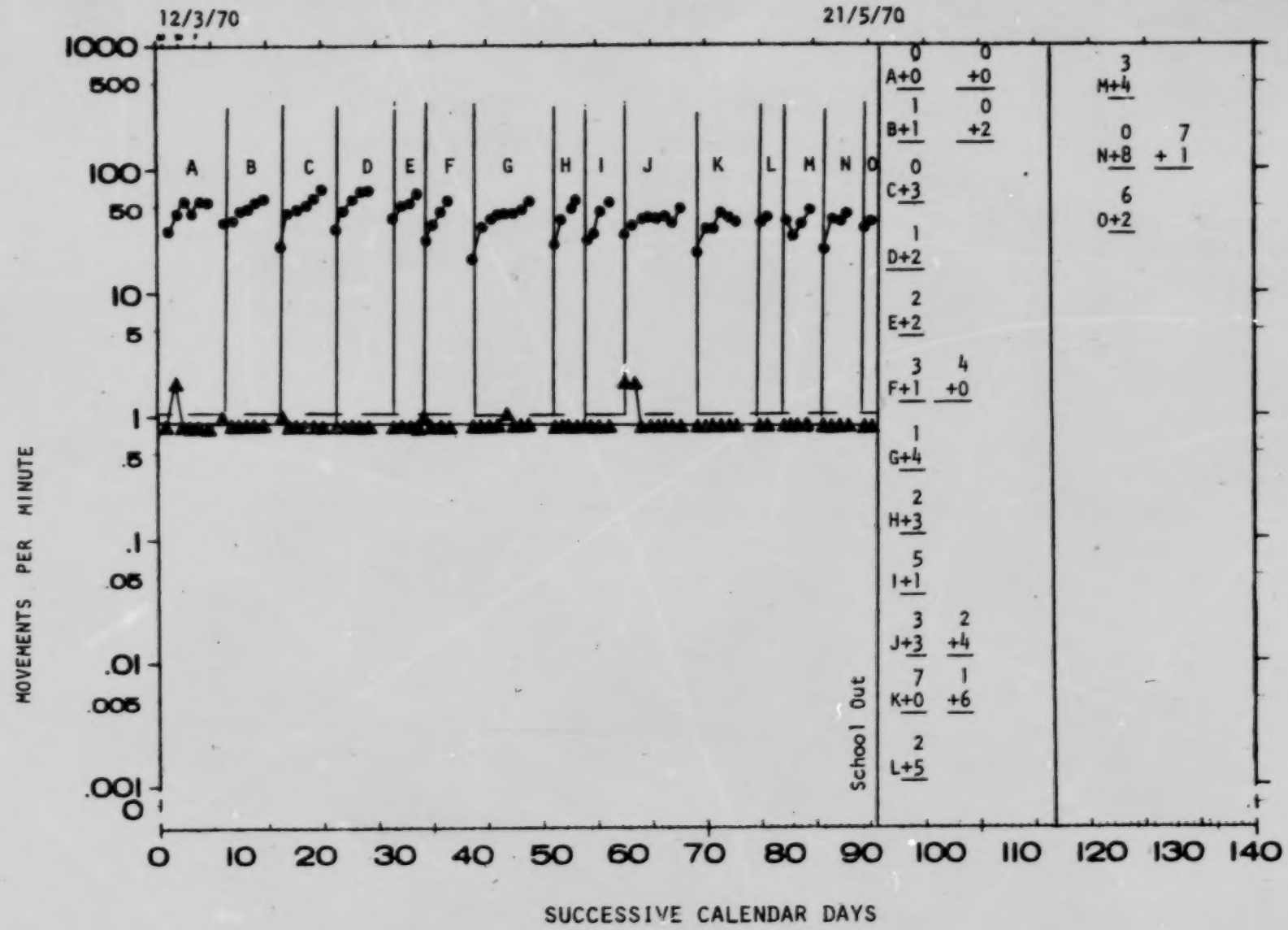
Results

John was able to write numbers whose sums are less than ten at a rate of six per minute with an error rate of four per minute when presented with a composite sheet. When the program was sliced into little steps, he was able to succeed at an acceptable rate.

It should be noted that each one-minute session was recorded rather than a total of each day's work.

Discussion

It would appear that some children are enabled to succeed when the program is "sliced up" into smaller steps.



Caufield	Caufield	Osborne
Supervisor	Adviser	Manager

John 8 Osborne R-2 to write sums >10 more

I plan to rewrite the sequence with the first class +0, the second +1, the third +2, and so forth.

The classroom teacher observed the teaching sessions. Her comment was, "I've never seen him work that hard." John began to attempt classroom math assignments. The teacher was very pleased with John's improved attitude toward math.

Example 2--J. Osborn

Protege

Vincent, seven year old second grader.

Target or Problem Movement Cycle

To write more correct answers to Sullivan Programmed Reading.

Procedures

Student was referred to the Resource Center for remediation of a reading problem. His classroom teacher indicated that he was not getting his work accomplished, and and was not making adequate progress in reading.

Initially, Vincent was given a global assessment which was then followed by a detailed reading assessment. The placement test for Sullivan programmed material, coupled with other assessment information, allowed an individualized placement in Stage II, Sullivan Programmed Prereading.

Stage II is a teacher-directed program where students are introduced to relationships that exist between letters and the sounds of speech. Children learn that letters stand for sounds and that they have to say the letter sound in order to read it. Distinctions were emphasized between the name of a letter and its sound. The left-to-right relationship was taught, with

other emphasis given to proper letter spacing and ending sentence.

During instruction in this stage, the letters taught were m, n, t, a, and I. Capital letters such as I were taught as separate words, and with the information that they sound like their names. Reemphasis was on written symbols, and their relationship to sounds of words was given.

In Phase A review, immediate oral response was elicited by asking for brief information such as letter recognition, followed by kinesthetic tracing of the book-illustrated letter. Tracing was by pencil, then by finger over the book-illustrated printing. When both capital and small letter names were reviewed with required legible printing, sound/symbol cards were used to teach the sounds of a, m, n, I, and t. After an 80% accuracy of oral response and written work, Phase B was embarked upon.

In Phase B, instruction was given in the use of the slider, and self-correcting data collection procedures were initiated. Materials used included the sound/ symbol cards for f, p, th, and I.

Vocabulary was introduced prior to work on each unit of the programmed prereader. The Language Master was employed for teaching and drill on vocabulary necessary to function successfully in each unit of the prereader. Cards printed with relevant words were run through and pronounced by the instructor, then by the student in turn. 100% recognition was required before entry into each unit.

Vincent was given a timer and worked for 15 minutes under close teacher supervision. New words, or loss of recognition words were written down on a word list taped to the student's desk.

After completion of Part 3 of the Primer, a score of 85% was obtained on the Reading Readiness Test. Phase B was thus completed with a median

score of 4.0 correct per minute and an error of .06 per minute. A score of 85% or higher was required on all four unit tests prior to continuance of the next unit. Otherwise, problem areas were reviewed to insure student success.

Successful work was reinforced daily. A store was set up and points were awarded. These points determined which items could be purchased. Points were given for successful work and acceptable behavior.

After Spring vacation, 15 minutes daily were devoted to teacher-directed activity, which included word recognition, sounds, and their inclusion in words for pronunciation purposes. The Language Master was additionally used to familiarize Vincent with new words prior to unit commencement.

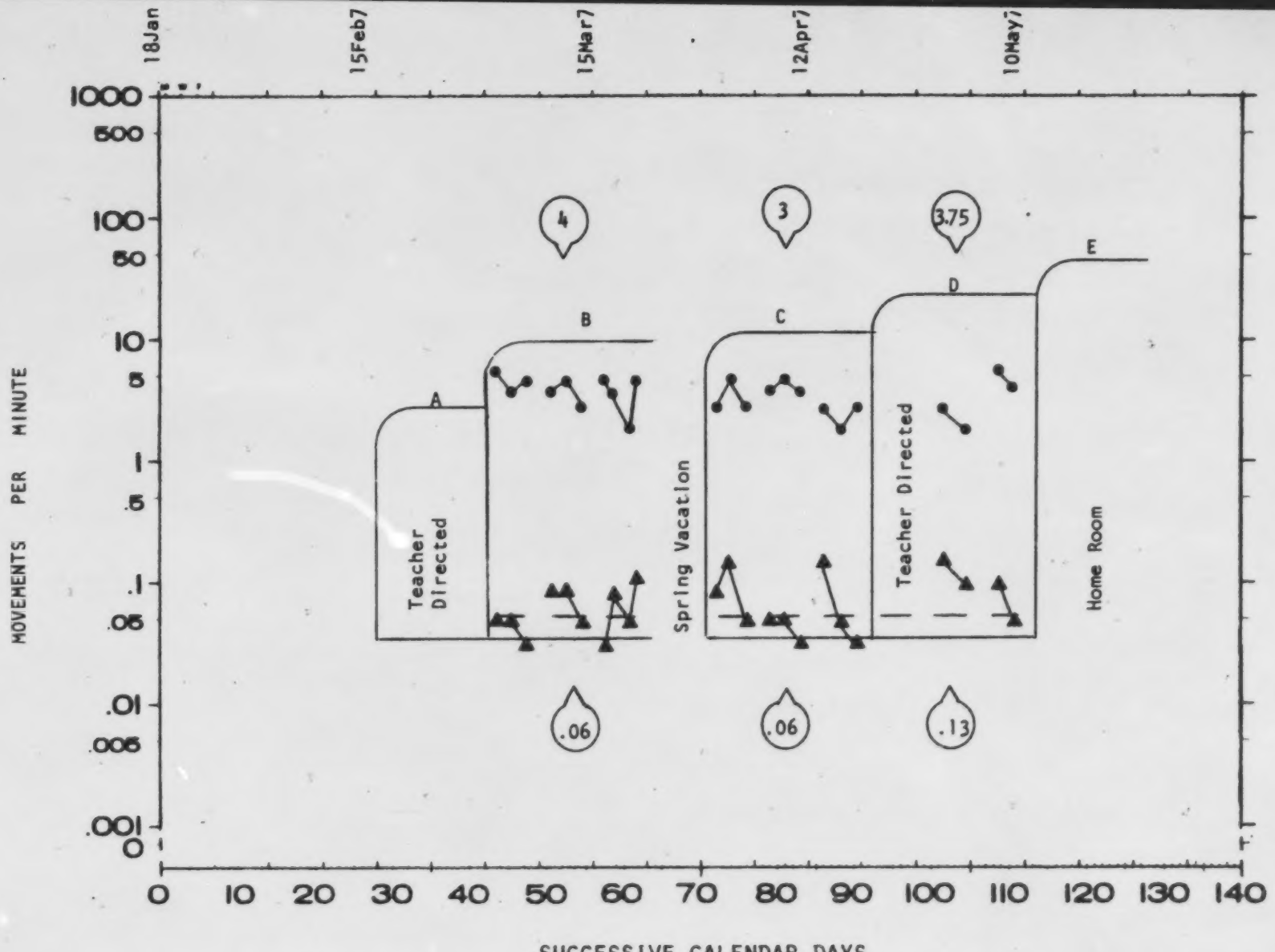
Phase C data disclosed a correct rate of 3.0 per minute with an error rate of .06. Supplementary work was now being given in the classroom two days a week with Resource Room progress charted three days a week.

In Phase D, this student was sent back to his classroom with his book and data were obtained periodically from the classroom teacher. Data revealed a correct rate up from 3.0 to 3.75, with a slightly higher error rate of .13.

During Phase E, classroom materials were used with good success by the teacher. No data were kept although continued success was indicated by the classroom teacher.

Results

Oral response rate continued to significantly improve in Phases A, B, and C. Written work also met criteria of 85% or better during the first three phases. D & E criteria were determined by the classroom teacher, and she seemed happy with the results of student performance. Continued improvement was



41

40

Caufield Supervisor	Osborn Adviser	Rauch Manager	Vincent Osborn	7	Reg. 2	To write more correct answers to Sullivan Prog. readings

evident from chart analysis of the transition from Resource Room to classroom. Error rates continued at a low level.

Conclusions

Vincent acquired a small reading repertoire with the presentation of Sullivan Programmed Reading materials and successfully progressed at his own rate through these programs.

The point system and store proved to be an effective method of reinforcement for this student.

Example 3--G. Evanson

Protege

Bob, twelve year old sixth grader.

Target or Problem Movement Cycles

To write answers in Sullivan Math more (Book 3 Subtaction); to write answers in Sullivan Math more (Book 4 Multiplication); to write multiplication facts more; to write digits in Sullivan Math more (Book 4); to write digits in Sullivan Math more.

Procedures

Bob was placed in Sullivan Associates Math Program, Book 3, as determined by the Placement Test which accompanies this series. An orientation to the materials was given, and the use of an event sheet was explained to Bob. A 30-minute work period was chosen. Bob was doing this work in the resource room along with one other student. All data were taken from the event sheet which was filled in by the student. This information was transferred to the Daily Behavior Chart by the Resource Teacher. After every twelve pages in

the Programmed Math Book, a progress test was given. This test had to be corrected by the teacher and a score of 85% was required to go on in the book. These procedures carried throughout the time Bob worked in the Resource Room.

Results

Phase A. Bob used Book 3, Subtraction. Consistency here was less than desirable. Much of this was the result of the programmed material, but by observation. Bob was spending much time not working, and his percentage of correct was always above 85% on the placement test. The last 3 plots (correct) were very low. These scores were made in the last part of Book 3 and because of the percentage correct, an incentive was added to Bob's work rate. I needed a helper with another group of students and after receiving an okay from Bob's teacher, I asked him if he would like to work as a helper and, if so, he could earn this privilege. Bob readily agreed. A ratio of 10 problems for 1 minute of helping time was established. Bob could spend up to 10 of these earned minutes each day helping me. Any extra time could be saved for another day.

Phase B. Here Bob used Book 4, Multiplication. The first 48 pages of this book were easy, going only as far as 1 place multipliers and 6 place multiplicands. At the end of Phase B, Bob's rates had fallen off and through analysis of the material, I decided that a change of program was needed.

Phase C. This phase consisted of a teacher-made multiplication facts program. Practice on the multiplication facts was first given on the Language Master. Then a 5-minute period of multiplication fact sheets was given and

recorded on the Daily Behavior Chart. The times tables were grouped by 3, 4, 5's and 6, 7, 8, 9's, starting with one and going to nine. Criterion was set at two consecutive days of missing one or less coupled with a rate of more than 15. This would allow Bob to go on in the program. Because of the nature of these problems, the point ratio was changed to 20:1.

Phase D. After successfully completing the times table program, Bob was returned to the programmed material. Because of the nature of the problems, the response definition was changed to digits rather than answers. The point ratio remained at 20:1. During the last week of Phase D, Bob ran into trouble with place-value, making many errors. A teaching session previous to the programmed math was instituted.

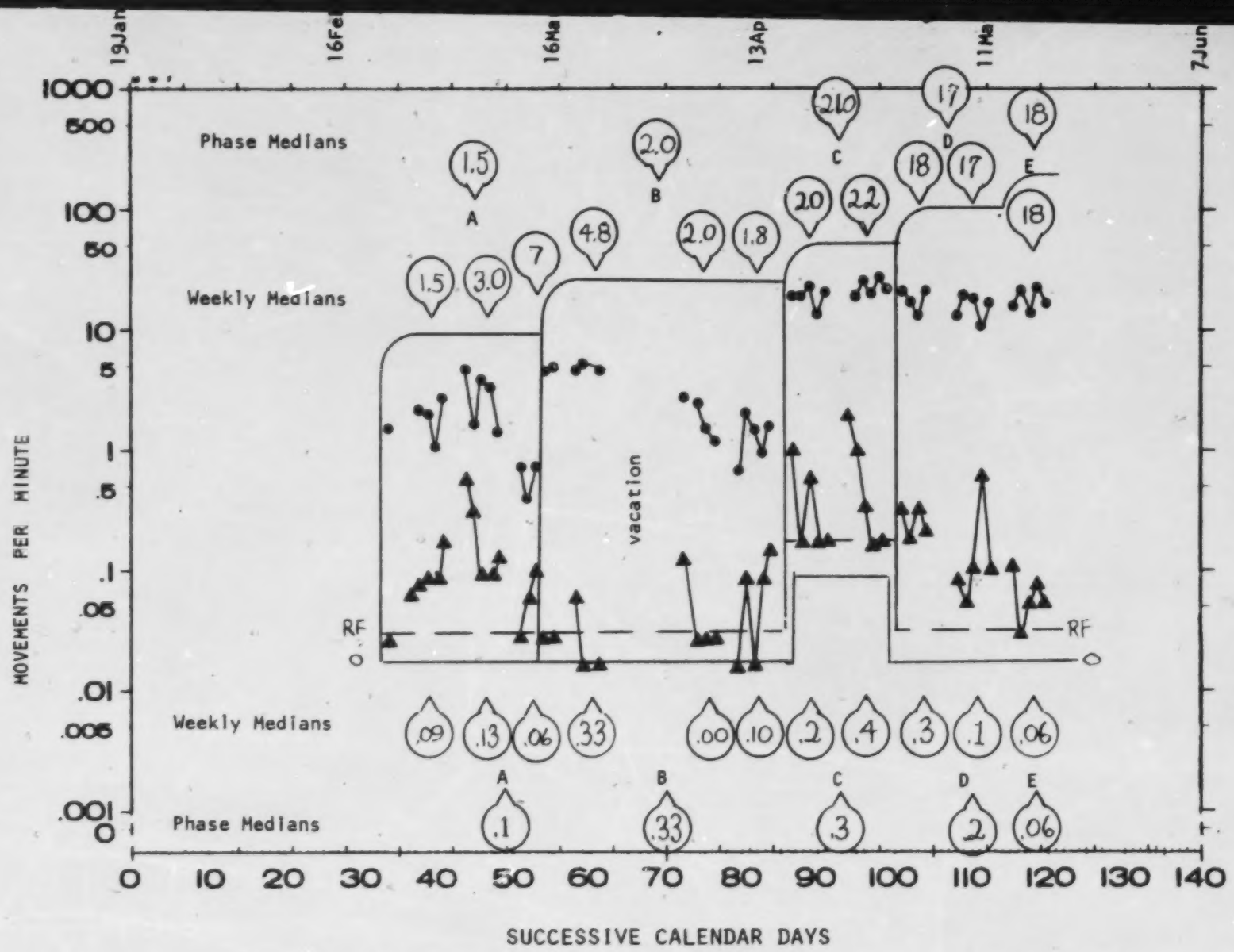
Phase E. Programmed Math worksheets teaching place-value were given out before each session. Then Bob would go into his programmed math material. His error rates were dropping rapidly and his correct rates were climbing. He had almost finished the material when his father was transferred. Had he remained, he would have progressed to Book 5, Division.

Conclusion

Bob had progressed through his math material at a satisfactory rate. He had learned his times-tables, a fact which received much praise from his teacher.

Working knowledge of arithmetic was greatly increased. In helping me with another class, he had to use his number facts to check answers of the younger children. This improved greatly as his program progressed.

Bob's teacher also commented on an attitude change that she had noticed. He would volunteer to answer questions, and became more independent in doing his class work.



Caufield	Evanson	Evanson		Bob A. Evanson	12	Grade 6	Write answers correctly, Sullivan material

Example 4--E. Jarvis

Protege

David, a seven year old first grader.

Target or Problem Movement Cycle

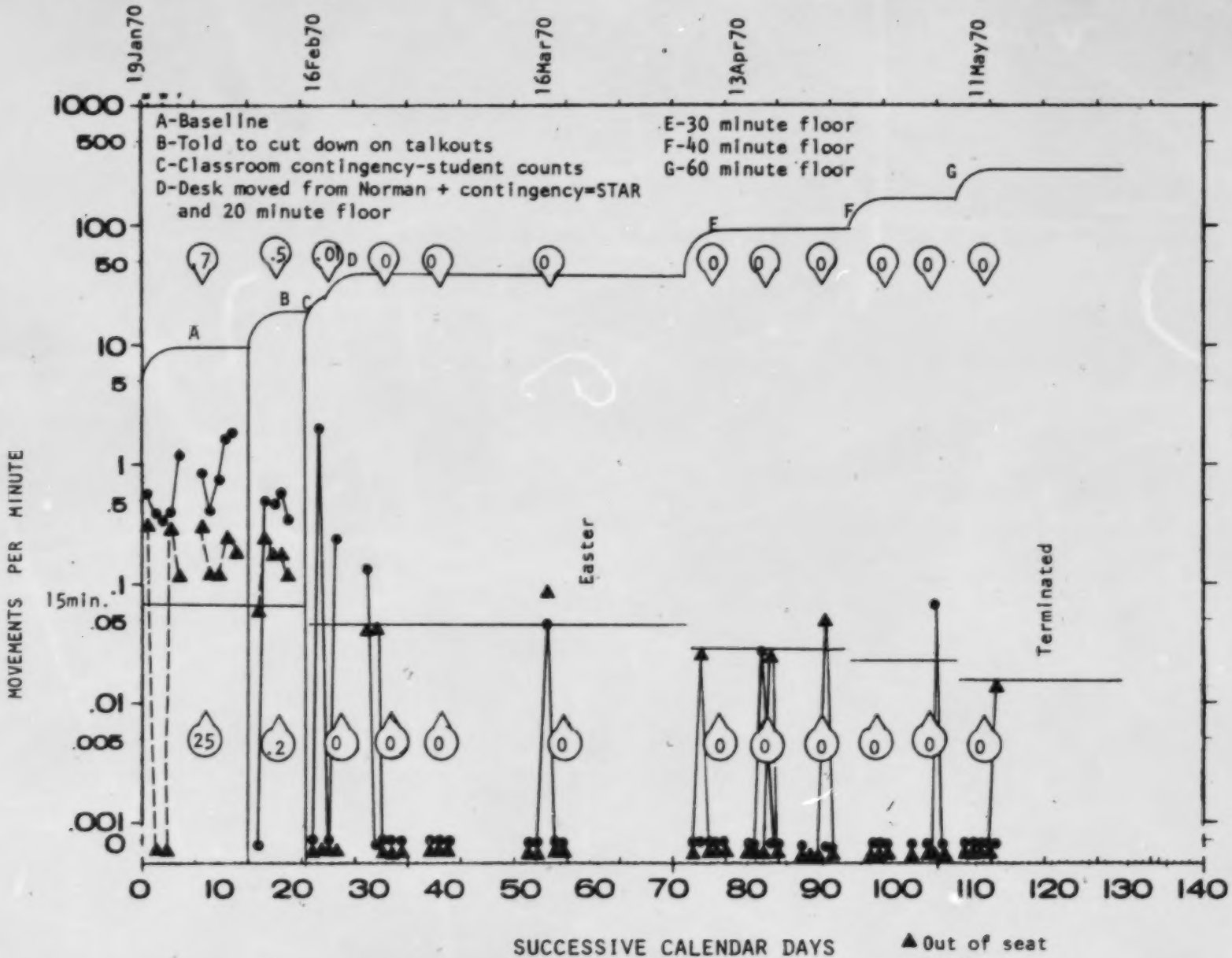
To talk out in class less and to get out of his less in class. David constantly talked in class, could not stay in his seat for very long, and was very slow in learning academic concepts. He was to be maintained in a regular classroom setting by a classroom teacher. Short sessions were available daily with the school resource teacher, but were not necessarily needed. Proced

Procedures

Baseline: the classroom teacher counted how many times David talked and got out of his seat without permission during a fifteen-minute session daily for two weeks. David was told by the resource teacher that he could not come to the resource center to learn to read unless he would cut down on his talking. (Poor contingency: how could I teach him reading if he kept talking?) Classroom teacher took over contingency (as suggested by the resource teacher), and gave David stars on a chart if he could remain in his seat and be quiet during the fifteen-minute session. A classroom student counted David's rate. David was moved away from another student. The contingency was continued, and the time counted was extended to twenty minutes per day. The session was extended to thirty minutes per day, then forty minutes per day, and then sixty minutes per day.

Results

At baseline, David talked out seven times every ten minutes during the fifteen-minute session, and he got out of his seat two-and-a-half times every



Caufield Jarvis Dukes-Jarvis
Trainer Adviser Manager

David P. 7 R-1

To talkout and be out of seat less.

ten minutes during the fifteen-minute session. By the end of the year (actually, fourteen weeks) David was staying in his seat and not talking without permission during sixty-minute sessions each day.

Discussion

It is possible that David had never learned how to be quiet or how to keep from disturbing other classmates by getting out of his seat. The classroom teacher sees the value of behavior modification now, and is doing many projects on her own successfully without the advice of the resource teacher.

Example 5--M. Gustin

Protege

Walter, a 9-and-a-half year old third grader.

Target or Problem Movement Cycle

To write answers to Sullivan A-D-M and to read more. Walter was referred to the Resource Teacher by his classroom teacher because of his low academic performance, and for academic assessment. During this initial assessment, reading, spelling, and arithmetic skills were examined. Reading and spelling skills were found to be most in need of remediation. These results were communicated to the classroom teacher who agreed that the main emphasis should be placed on reading.

Procedures

A more detailed assessment in the area of reading was now conducted by the Resource Teacher. It was found that Walter had difficulty with beginning and ending consonant sounds as well as with beginning and medial short vowel sounds. Visual and auditory screening was also conducted and no significant impairments were observed.

Because of the nature of the skills to be remediated and because the classroom teacher wanted Walter to work as independently as possible, it was decided by the Resource Teacher and the classroom teacher to use the Sullivan Programmed Reading materials. Walter was given the placement test for the program and was placed at the Book 1 level, or approximately at the beginning of the first grade.

The classroom teacher then began the program with Walter in her classroom. A timer was provided and placed near Walter when he began work. When the time bell sounded he was to stop work and return his book to the classroom teacher. The classroom teacher arranged the work time so that it would conclude just after the rest of the class began a seatwork activity. This gave her time to immediatel correct Walter's work and chart it on a Daily Behavior Chart. This usually took about 5 to 7 minutes. The teacher began the program by explaining the use of the slider and assisting Walter through the first several responses. He was then allowed to work unaided for 10 minutes to establish a baseline rate. The result of this first work session is recorded as Phase A on the Daily Behavior Chart.

During Phase B Walter worked unaided in Sullivan Reading Book 1 for 15 minutes each day.

The teacher had noticed that during his 15-minute work period Walter would quite often look up and gaze around the room for short periods of time before returning to his work. Since Walter had become very interested in the computer terminal in the Resource Room, she decided to have him work toward a pre-marked point in his book while maintaining an accuracy level of 85% or above. If he reached the mark in his book and maintained the desired accuracy, he was allowed to earn 5 minutes daily on the computer terminal. The addition of

the computer contingency was listed as Phase C.

During Phase D the computer terminal had mechanical problems and was not available for use. At this time Walter completed Book 1 and was placed in Book 2.

During Phases E, E^1, E^2, and E^3 the computer terminal was used as a reinforcing event.

In Phase E Walter completed Book 2. Books 3, 4, and 5 were completed during Phases E^1, E^2, and E^3, respectively.

At the end of each book Walter was given a 50-item test covering the skills in the book just completed. If he scored 85% or higher on these tests he was placed in the next book.

Results

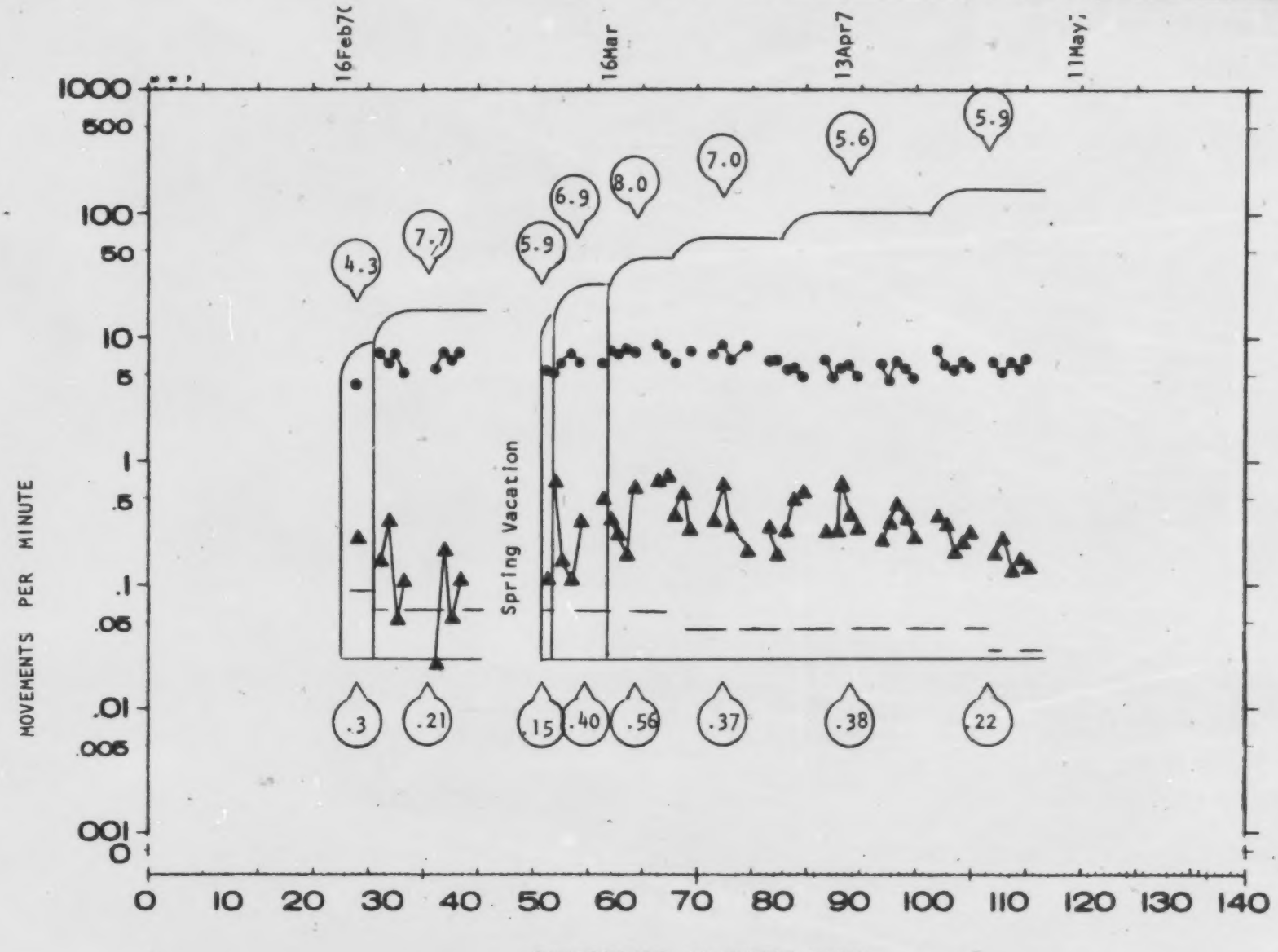
Walter completed Sullivan Reading Books 1-5. All tests were above 90% accuracy The median number of correct responses per minute increased from 4.3 to 5.9 while the median number of errors per minute decreased from .3 to .22.

Discussion

Walter should continue to be a member of the target population and receive continued support from the Resource Teacher in the form of individualized academic programming. He is still considerably below grade level in reading ability.

Additional Comments

Several "non-data supported" results were realized as Walter moved through the above program. His classroom teacher made unsolicited reference to his increased self-confidence in non-Sullivan reading tasks in the classroom. He began to raise his hand and volunteer answers to questions. A rather severe rash on his legs almost disappeared.



Caufield Supervisor	Gustin Advisor	Stegmiller Manager	Walter Stegmiller	9-7	Gr. 3	To write answers to Sullivan Reading more

Example 6--J. Pelander

Protege

Russell, an eight year old second grader.

Target or Problem Movement Cycle

Russell was referred to the Resource Teacher by the principal and teacher because he was such a disruptive influence in the classroom. The teacher complained that she was not able to do any teaching with Russell in her class; either he must leave and go back to a Special Education classroom, or she would quit. In meeting with the teacher to offer some assistance and ideas for managing Russell, four movement cycles were pinpointed by her: To hit self less, to talk out less, to get out of seat less, to make disturbing noises less.

Procedures

The Resource Teacher came to Russell's classroom for thirty minutes (11:00-11:30) each of the next three days and obtained baseline data. These data were recorded on a score sheet divided into the four pinpoints, and was checked by another Resource Teacher present in the room. Only three days of baseline data were obtained because of an increase in the severity and occurrence of his self-destructive hits along with our fear that Russell might inflict damage on himself.

The desired rates for all four of the pinpoints were 0. I predicted that Russell's rates would drop to 0 when a positive reinforcer immediately followed the absence of any of the four behaviors. His self-destructive hits had reduced during the last year when contingent reinforcers were used. His talk-outs, out-of-seats, and disturbing noises would, I predicted, have the same results. The

baseline median data indicated that hits occurred 1.5 times a minute, out-of-seats 0 times a minute, talk-outs, .9 times a minute, disturbing noises, .2 times a minute; therefore, there were 2.6 responses from Russell every minute.

The four social behaviors that were measured are defined as: 1) hitting self, the use of open or closed fist, finger, pencil or crayon to strike himself anywhere on his head or neck from a distance of one inch to three feet. Each and every hit was counted, whether separate or in rapid succession. 2) Disturbing noises. Pencil tapping, desk scooting, chair scooting, desk lifting and banging down, chair lifting and banging down, and fist banging on desk or chair. Each "burst" of noises with a pause after it was counted as one noise. 3) Out-of-seat. Any time Russell got off his chair without raising his hand for permission from the teacher first, or being called by the teacher to come to her or to the front of the room. 4) Talk-out. Any verbalization, including singing, that came from Russell unless he had been called on to respond by the teacher or a student or had raised his hand for permission to respond. Each burst of words with a pause after it was counted as one talk-out.

Management of Russell took place daily in his second grade classroom at his desk, which was placed in a row just as the other children's were. The manager was present from 11:00 to 11:30, which was the same time used for baseline data. This established a 30-minute record floor.

The following presentation criterion of the antecedent event was followed in every phase after baseline. The manager walked to Russell's desk, placed the point sheet grid on his desk and said, "Remember, Russell, today you must earn _____(according to the phase)stars to buy your computer time." The manager sat in a chair the prescribed distance away (in Phase B and C the manager was

next to Russell, and in Phases D and E the manager was five feet away from Russell) and began timing on the room clock (Phase B: 2-minute segments, Phases C and D: 5-minute segments, Phase E: 10-minute segments). If Russell did not perform one of the behaviors during the time segment the manager would put a star on the grid and say "Good, Russell, you have good classroom behavior." and then begin timing the next segment. If Russell did perform one of the behaviors, the manager would erase a star and say, "You may not _____(listing the behavior performed) in the classroom," and then begin timing the next segment.

The ratio arrangement was established by the manager and explained to Russell the first day of the management. Phase B was a 2:1 arrangement; two minutes without a behavior occurring equaled one star (minus one star if it did occur). Phase C and Phase D was a 5:1 arrangement; five minutes without a behavior occurring equalled one star (minus one star if it did occur). Phase E was a 10:1 arrangement; ten minutes without a behavior occurring equalled one star (minus one star if it did occur).

The subsequent event was the immediate reinforcer of the star paired with the verbal praise, or the removal of the star paired with the verbal rule. The cash-in reinforcer of the computer was chosen by Russell.

At 11:30 the manager and Russell left the room, and if Russell could leave without a behavior's occurring, he could earn a star; but if one did occur, he lost a star. Russell counted his stars for the day and the manager asked, "Did you earn enough stars to buy your computer time?"

During Phases B, C, and D he needed five stars for his computer lesson. In Phase E he needed four, which meant that no behaviors could occur during the thirty minutes and while he was leaving the room. If Russell did earn his computer time,

the manager took Russell to the Learning Center and observed him through the two-way window while he did his computer lesson, and dismissed him to go back to his room alone. The manager charted the day's performance on 6-cycle graph paper from the information on the grid sheet. (As the manager gave or took away Russell's stars in the classroom, she marked the behavior emitted under the appropriate column at the bottom of the grid score sheet.)

Results

To hit self less.

Phase A - Baseline - Manager observing at the back of the room. The median rate was 1.5 hits a minute with a trend line of X1.8 per week acceleration.

Phase B - Manager sitting next to child with 2-minute segments and five stars to buy computer time. The median rate was .12 hits a minute (12 every 100 minutes) with a trend line of ÷ per week deceleration.

Phase C - Manager sitting next to child with 5-minute segments and five stars needed to buy computer time. The median rate was .07 hits per minute (7 every 100 minutes) with a trend line of ÷ 1,000 per week deceleration.

Phase D - Manager sitting five feet away from Russell with 5-minute segments and five stars needed to buy computer time. The median rate was 0 hits per minute.

Phase E - Manager sitting five feet away with 10-minute segments and four stars needed to buy computer time. The median rate was 0 hits per minute.

To Make Disturbing Noises Less.

Phase A - Baseline. The median was .2 noises per minute with a trend line of X10,000 per week acceleration.

Phase B - The median was 0 noises per minute with a step down of 10 per day deceleration.

Phase C, Phase D, Phase E

The median was 0 noises per minute.

To Get Out of Seat Less

Phase A - Baseline. The median was 0 out of seats per minute.

Phase B and Phase C - The median was 0 out of seats per minute.

Phase D. The median was .035 out of seats per minute (3.5 for 100 minutes).

Phase E. The median was 0 out of seats per minute.

To Talk Out Less

Phase A - Baseline. The median was .9 talk-outs per minute (9 talk-outs in 10 minutes), with a trend line of X30 per week acceleration.

Phase B. The median was .06 talk-outs per minute.

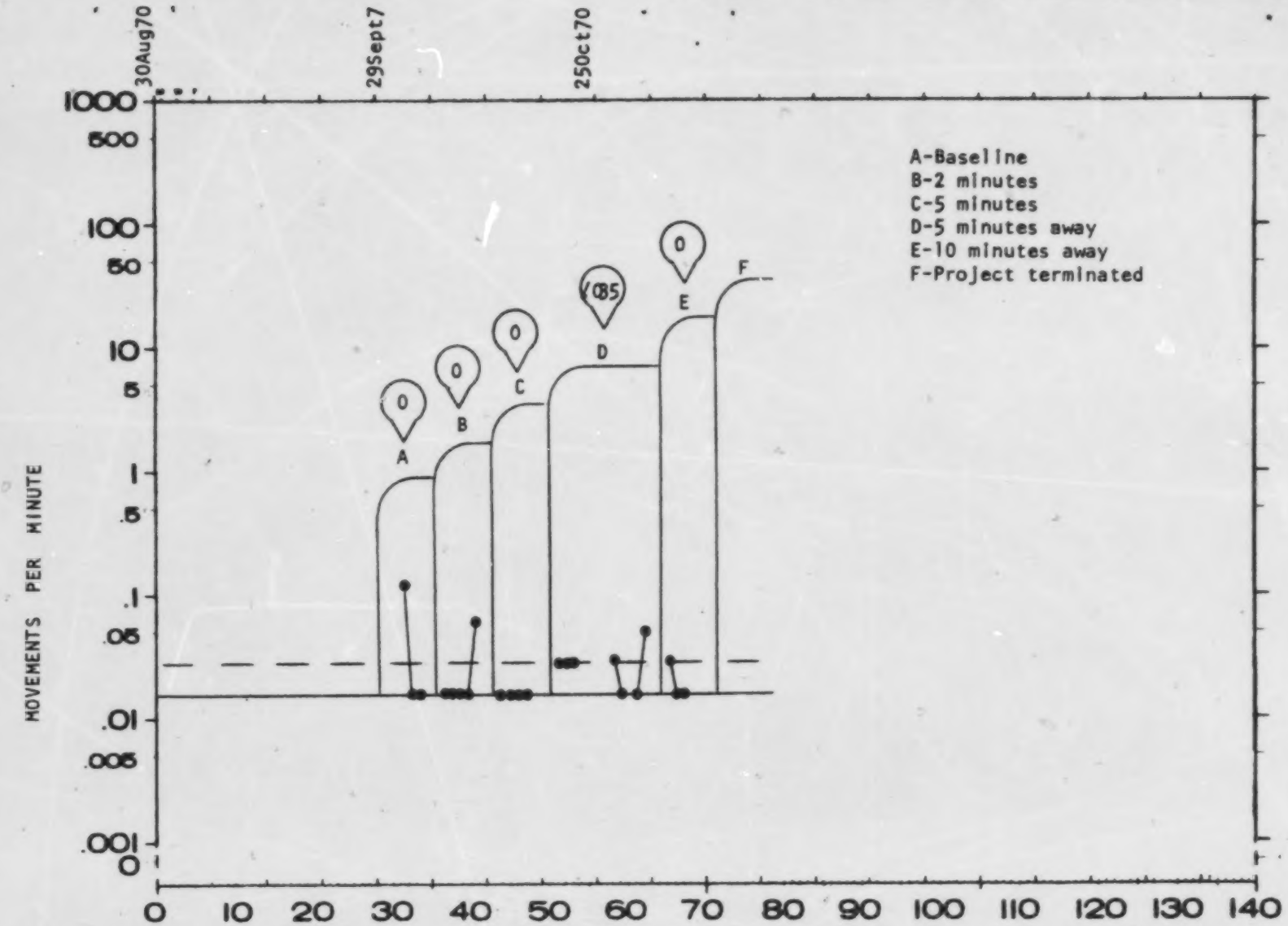
Phase C, Phase D, Phase E. The median was 0 talk-outs per minute.

Discussion

In two weeks (three weeks for one behavior) Russell's behaviors had reached their desired rate, 0, by using Precision Teaching procedures. I feel this method could now be extended to the whole morning, then the whole day. I also have recommended that a countoon for "hitting self less" be initiated so that Russell can be responsible for his own recording. The last day I was with Russell he drew his own countoon and I explained the way to use it.

Russell's results prompted me to use this extinction procedure on two other children with severe behavior problems. Their results suggested that this is an effective way to manage problem behaviors quickly.

I feel any teacher can handle these procedures. I hope that some will try, and thereby allow a "Special Education" student to benefit from being in a normal classroom.

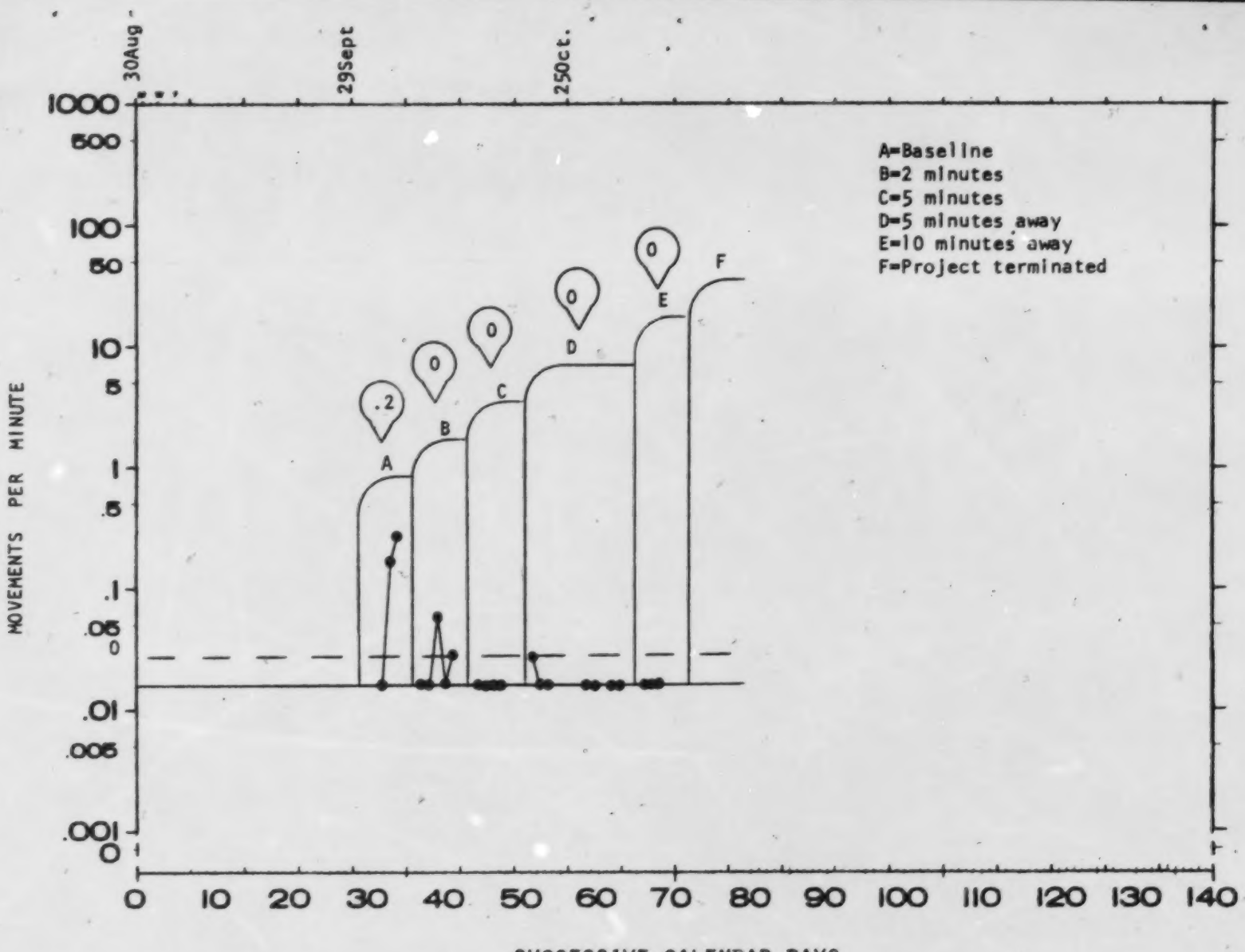


Caufield — Pelander
Adviser — Manager

Clover Park
Agency

Russell 8 2nd Gr. To get out of seat less

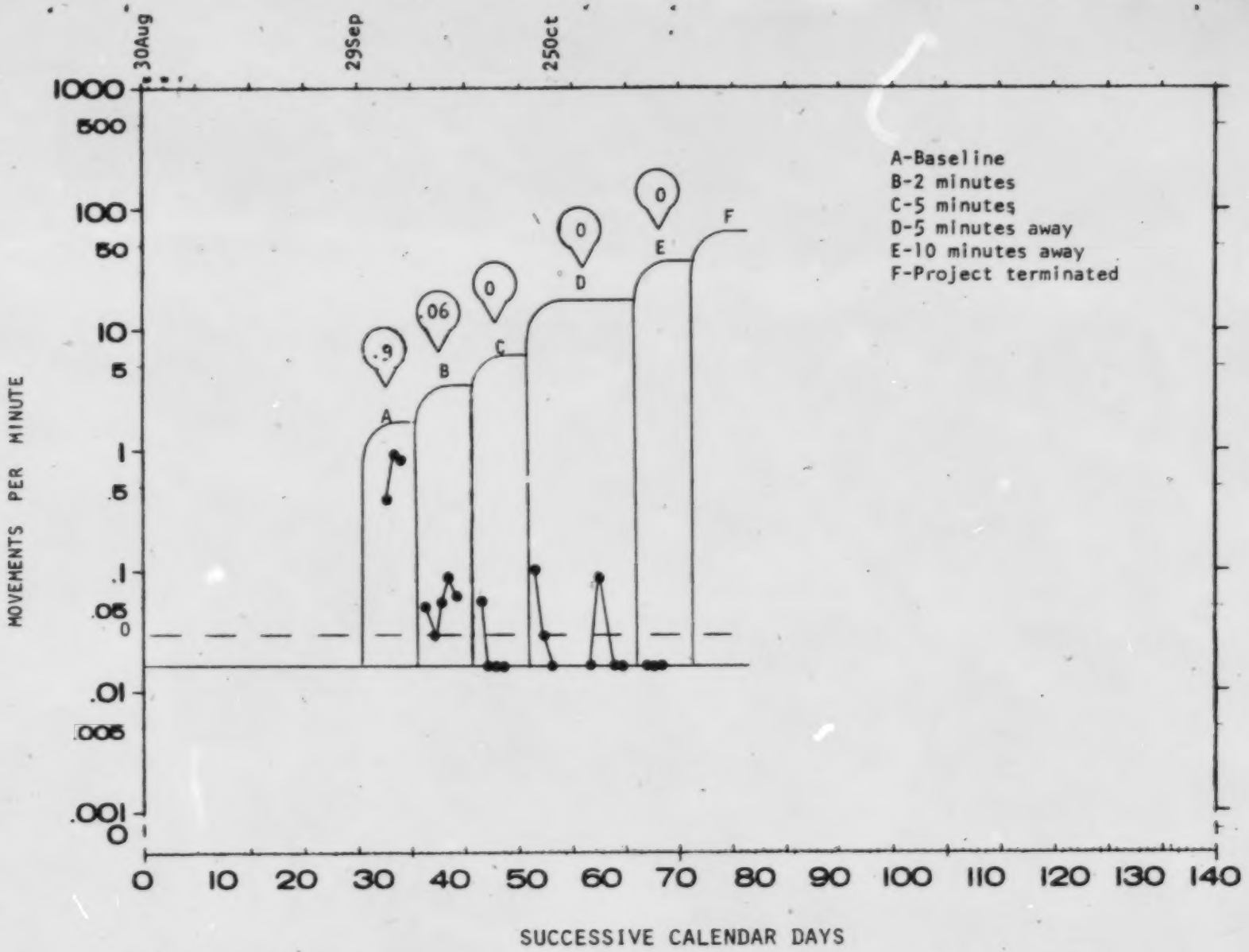
Pelander



Caufield Pelander
Adviser Manager

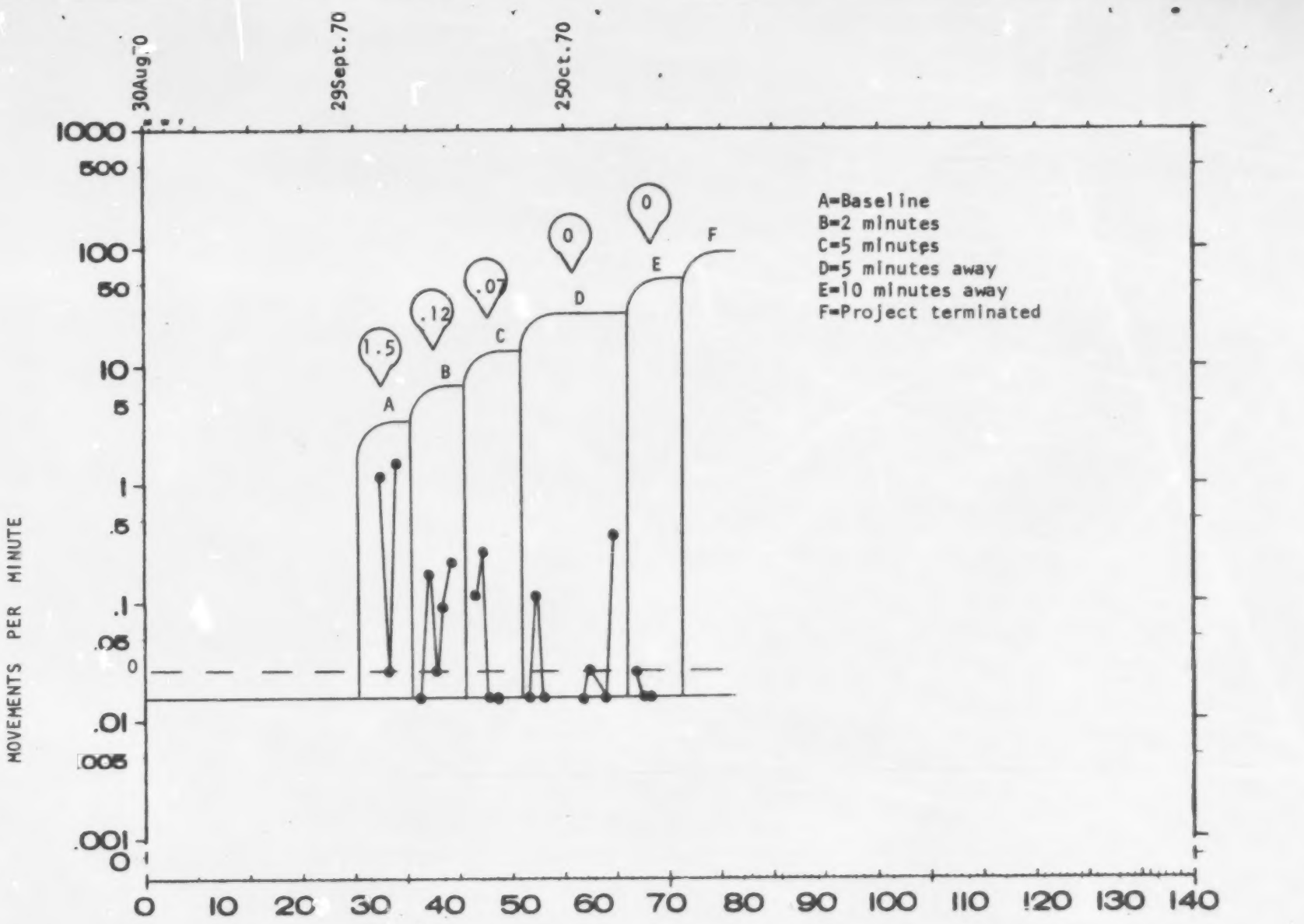
Clover Park Agency

Russell Pelander Age 8 2nd To make disturbing noises less



Caufield Pelander
Adviser Manager
Clover Park

Russell 8 2nd Gr. To talk out less
Pelander



Caufield Pelander

Clover Park

Russell Age 8 2nd To hit self less

Pelander

Example 7--P. May

Protege

Linda, an eleven year old, fifth grade student.

Target or Problem Movement Cycle. Increase correct oral reading rate. This study was conducted to compare pre-reading to no pre-reading to evaluate its usefulness as a technique to increase correct oral reading rate. Prior to the study, Linda's oral reading rate, according to her instructor, ranged from 80-90 words per minute. Based on information obtained from Eric Haughton, University of Oregon, the Instructional Resource Teacher set as the behavior goal the acceleration of Linda's oral reading rate to approximately 100 words per minute.

Procedures

Open Highways 5[1] by Scott, Foresman and Co., and the Controlled Reader Study Guide 5[1] published by McGraw-Hill were the two readers chosen for the study. The C.R.S.G. was selected because of its low vocabulary, high-interest appeal. The materials were arranged from day to day during the fifteen-day research period.

Each morning during reading periods, the Instructional Resource Teacher, as manager, visited Linda's class to conduct the project. The instructional procedures were the same from day to day for both books during the five day baseline period of the ABA design.

Linda received instructions to choose a story from each book and read orally for five minutes from each reader. She read daily, first, from the Scott, Foresman basal reader, followed by equal time in the Controlled Reader Study Guide. As Linda read orally, both correct and error data were obtained

and written on a regular piece of notebook paper by the manager. No further instruction or feedback was provided. Errors consisted of additions, subtractions, and omissions. Repetitions were not counted as errors. Upon completing the readings, Linda returned to the regular independent reading program with the remaining students in the class.

Using the precision teaching technique of continual and direct measurement, the manager counted the number of correctly and incorrectly read words and divided each total by five to arrive at an oral correct and error reading rate per minute. The total correct and error data were transferred to a six-cycle semi-logarithmic chart for permanent recording.

Reliability checks were made on Monday and Friday by the classroom instructor as the baseline information was secured. The Instructional Resource Teacher and the instructor were in 95% agreement on the correct and error data during the checks. The reliability check was conducted by both teachers' listening and recording data at the same time during the reading sessions. Four additional checks using identical procedures were made during the remaining two phases. Two checks (Monday and Friday) occurred in each phase. Again, they reached 95% agreement.

A pre-reading procedure for the Controlled Reader Study Guide was initiated during the five day Phase B segment of the study. Linda read orally to the Instructional Resource Teacher from the basal reader first. Then, she moved to her seat to silently pre-read the other story of her choice. After pre-reading she returned to the manager to read orally for five minutes. The identical recording and charting conventions were used during all three phases of the experiment.

Phase C replicated Phase A of the study. Again, all procedures, timing, and counting conventions duplicated those of the previous phases.

Praise, the arranged event, was given verbally on an intermittent schedule during Phases B and C. The manager praised Linda as she read orally and at the end of the reading session in each reader.

Results

Results of the data indicate an acceleration in the Scott Foresman basal reader from a baseline median correct rate of 80 words per minute to 98 words per minute. The median error rate increased from 2.6 to 4 words per minute.

The median correct rate in the Controlled Reader Study Guide improved from a baseline 100 words per minute to 127 words per minute. The median error rate of 1.8 words per minute decelerated to .5 words per minute.

Median Results:

Phase A

Scott Foresman basal reader - correct 80 error 2.6

Controlled Reader Study Guide - correct 100 error 1.8

Phase B

Scott Foresman basal reader - correct 90 error 3

Controlled Reader Study Guide - correct 127 error .5

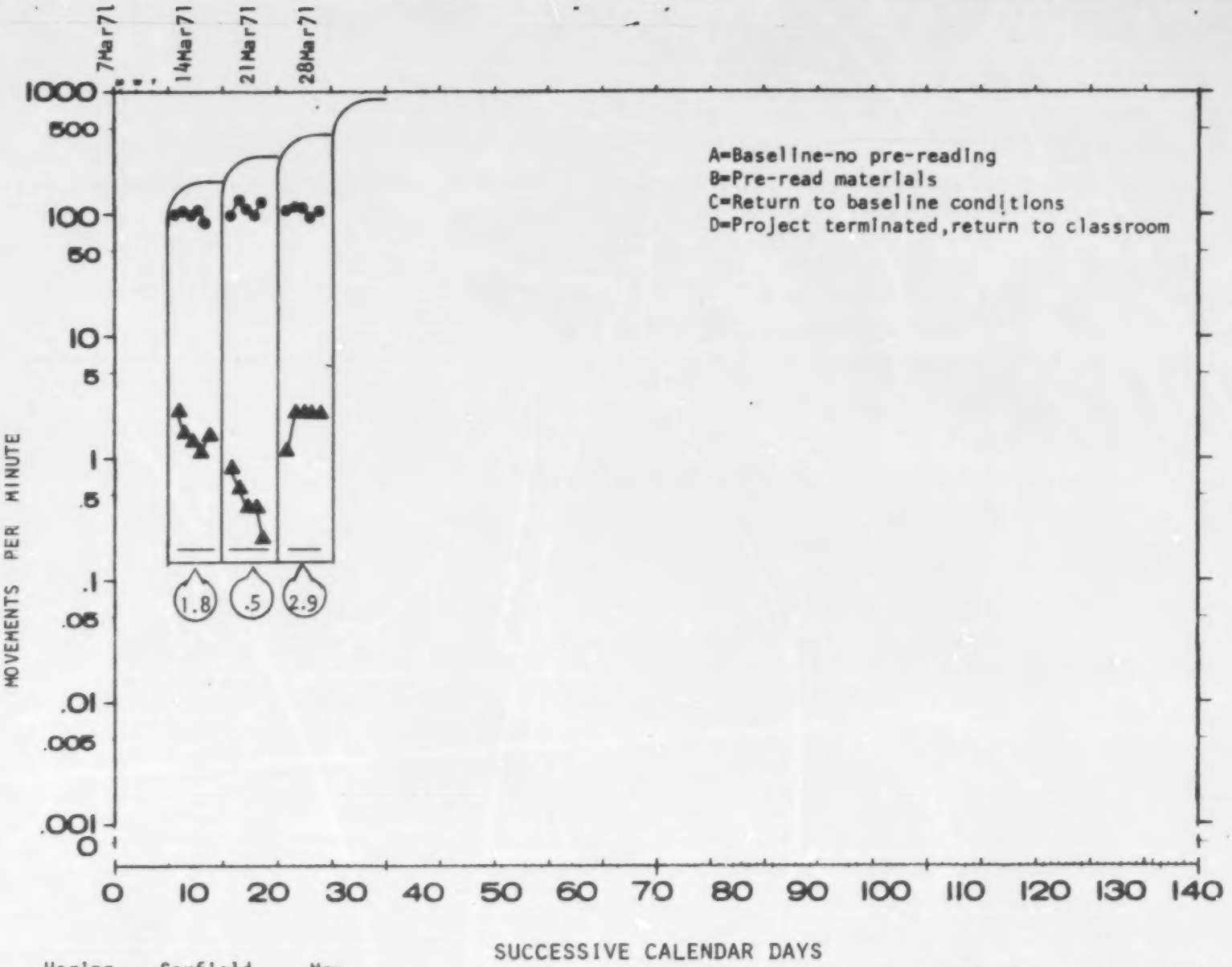
Phase C

Scott Foresman basal reader - correct 98 error 4

Controlled Reader Study Guide - correct 109 error 2.9

Discussion

The project data show an increase in oral reading rates in the Open Highways 5[1] basal reader and the high-interest, low vocabulary Controlled Reader Study Guide 5.[1] However, the significant increase in correct oral reading



Haring Caufield May

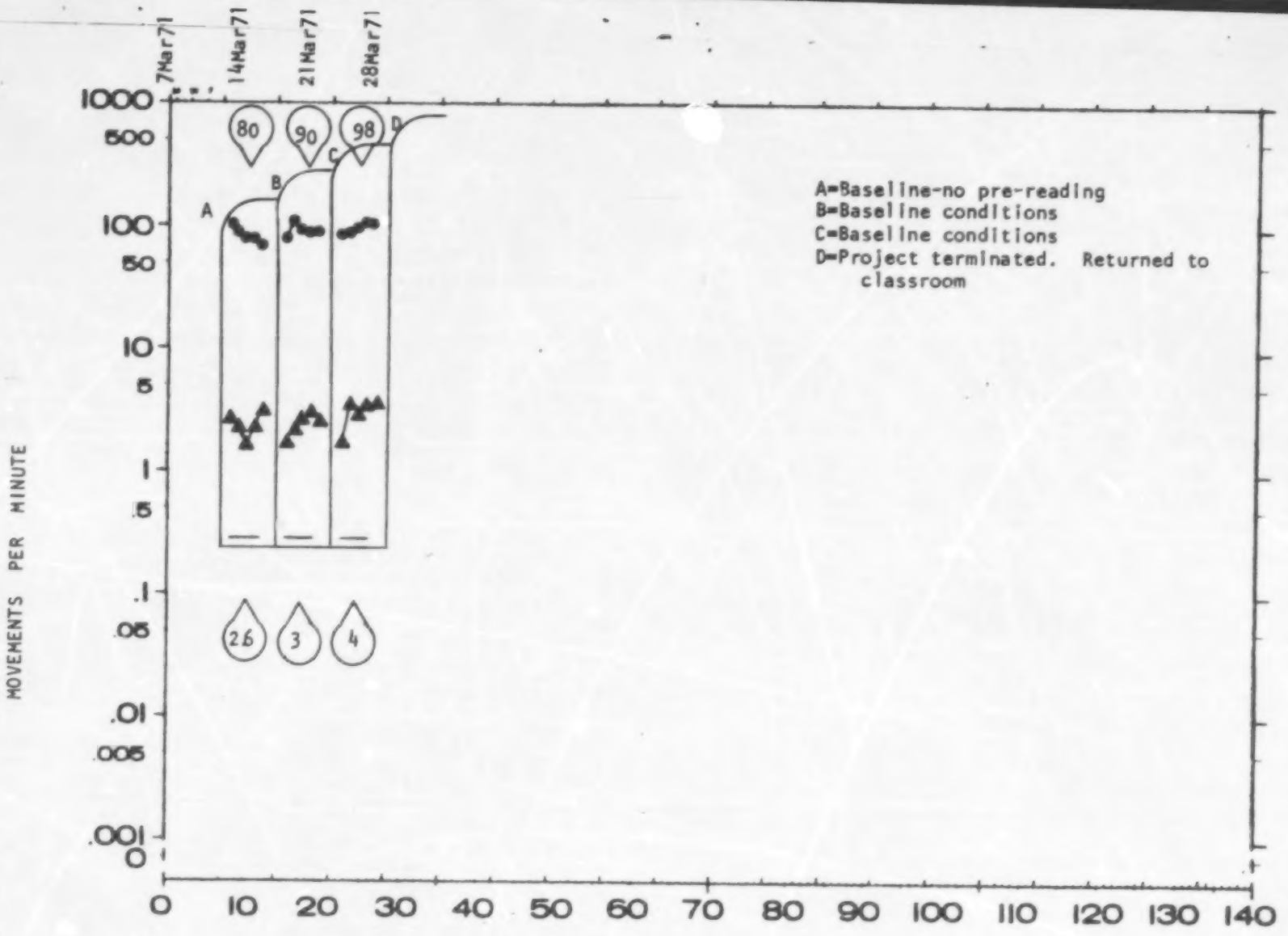
Clover Park

Linda T. Age 11 5 Accelerate oral reading rate

May

Controlled Reader Study Guide- Levels

5 minute samples



Haring	Caufield Clover Park	May		
Linda T., May	11	5	Accelerate oral reading rate	

Open Highways, 5- Scott-Foresman, 5-min. samples

rate during the pre-reading phase of the C.R.S.G. and a noteworthy deceleration in errors indicate that pre-reading is a useful tool in increasing correct oral reading rate.

As the Instructional Resource Teacher and manager of this project, I would recommend that many similar projects, using the technique of pre-reading, be conducted to offer more validity to the present study.

Example 8--B. Willis

Proteges

Four Clover Park third-graders were chosen to participate in the project. They were selected from referral forms submitted by their classroom teacher. Their ages varied from eight to nine years with the median age being eight years.

Target or Problem Movement Cycle

The pretest given by the manager showed that the four students were deficient in letter slant, letter formation, and letter ending.

Procedures

The students came to the Learning Center daily for a twenty minute session. Two of the students were in the experimental group; the other students were the controls. The Pelander and Willis penmanship program* was used for the experimental children. The two control children had teacher-prepared writing paper. Each of the four children had a packet containing the pretest, criterion test, work-sheets, letter tests, and 6-cycle charts.

In both groups, the children worked on the same letters which were selected from the criterion test. Each letter worksheet in the experimental children's

*Two Clover Park trainees, Pelander and Willis, have written a complete cursive penmanship program using the programming principles of Briggs, L. J., Learner variables and educational media, Review of Educational Research, April, 1968, 38, 160-176; Mager, R. F., Preparing instructional objectives, Palo Alto, Calif.: Fearon Publishers, 1962; Pipe, P. Practical programming, San Francisco, Calif.: Holt, Rinehart and Winston, 1966

folder had cues, phasing-out, and practice areas. The children would trace all cued letters, complete the phased-out letters, and finish the practice rows. Upon completion of the worksheet, the child would take a timed test which had a teacher-made model and a place for ten samples. The manager timed and scored the test. The letters were scored according to slant, formation, and ending. Each letter received one point for each of the three categories. An acceptable letter earned three points; to pass the test required thirty points, which was the criterion or desired rate for Phase B. If the children scored thirty, they proceeded to the next letter in their packet and repeated the above sequence. If the children did not score thirty points on the test, they proceeded to the branch program for that letter. After the additional practice with the branch, they took the test again. If they did score thirty points, they proceeded to the next letter in their packet. If the children did not score thirty, they returned to the cued worksheet for that letter and repeated the whole sequence until they scored thirty points. Following these procedures, the experimental children completed all the letter worksheets in their packets. In the connecting stroke phase, the children followed the same process as they did with letters except that the connecting strokes received four points each on a timed ten-sample test: one point for slant, one point for formation, one point for connecting stroke, and one point for ending. A passing test received a score of forty points. If the children scored forty points, they proceeded

to the next set of connecting strokes, and on through the sequence. If the children did not score forty points, they repeated the worksheet until they made forty points on the test. The correct and error scores of every test were plotted on 6-cycle graph paper. The only connected plots are the experimental children's repeated tests for the same letter. When necessary, these plots were connected through Sunday lines.

The control children were given a model at the top of the sheet and were told to practice the letter until the experimental children were ready to take the timed test. The correct and error scores the control group made on the timed test were plotted on their charts. They were given no extra chances to better their scores. Therefore, no plots were connected, but some blank days occur on the charts when the experimental child is taking a test.

Verbal praise was given by the manager to all the children. Each day all children took a one-minute sample of small cursive letters. Correct letters (having correct slant, formation, and ending) and errors were plotted on 6-cycle graphs.

Results of Straight Count Data

Baseline median data were:

Experimental Group	Control Group
Scott - correct 11 error 15	Lisa - correct 9 error 17
Cindy - correct 17 error 9	Marie - correct 17 error 9

Phase B median data were:

Experimental Group	Control Group
Scott - correct 30 error 0	Lisa - correct 26 error 4
Cindy - correct 27 error 0	Marie - correct 23 error 7

Phase C median data were:

Experimental Group	Control Group
Scott - correct 40 error 0	Lisa - correct 31 error 6
Cindy - correct 40 error 0	Marie - correct 40 error 3

Results of Timed Data

Baseline median data were:

Experimental Group	Control Group
Scott - correct 1 error 2	Lisa - correct 1 error 2
Cindy - correct 5.5 error 3	Marie - correct 5.5 error 3

Phase B median data were:

Experimental Group	Control Group
Scott - correct 30 error 0	Lisa - correct 30 error 4
Cindy - correct 50 error 0	Marie - correct 30 error 7

Phase C median data were:

Experimental Group	Control Group
Scott - correct 40 error 0	Lisa - correct 35 error 6
Cindy - correct 30 error 0	Marie - correct 15 error 4

Results of Daily One-Minute Cursive Samples

Baseline median data were:

Experimental Group	Control Group
Scott - correct 8 error 13	Lisa - correct 6 error 17
Cindy - correct 8 error 4	Marie - correct 15 error 8

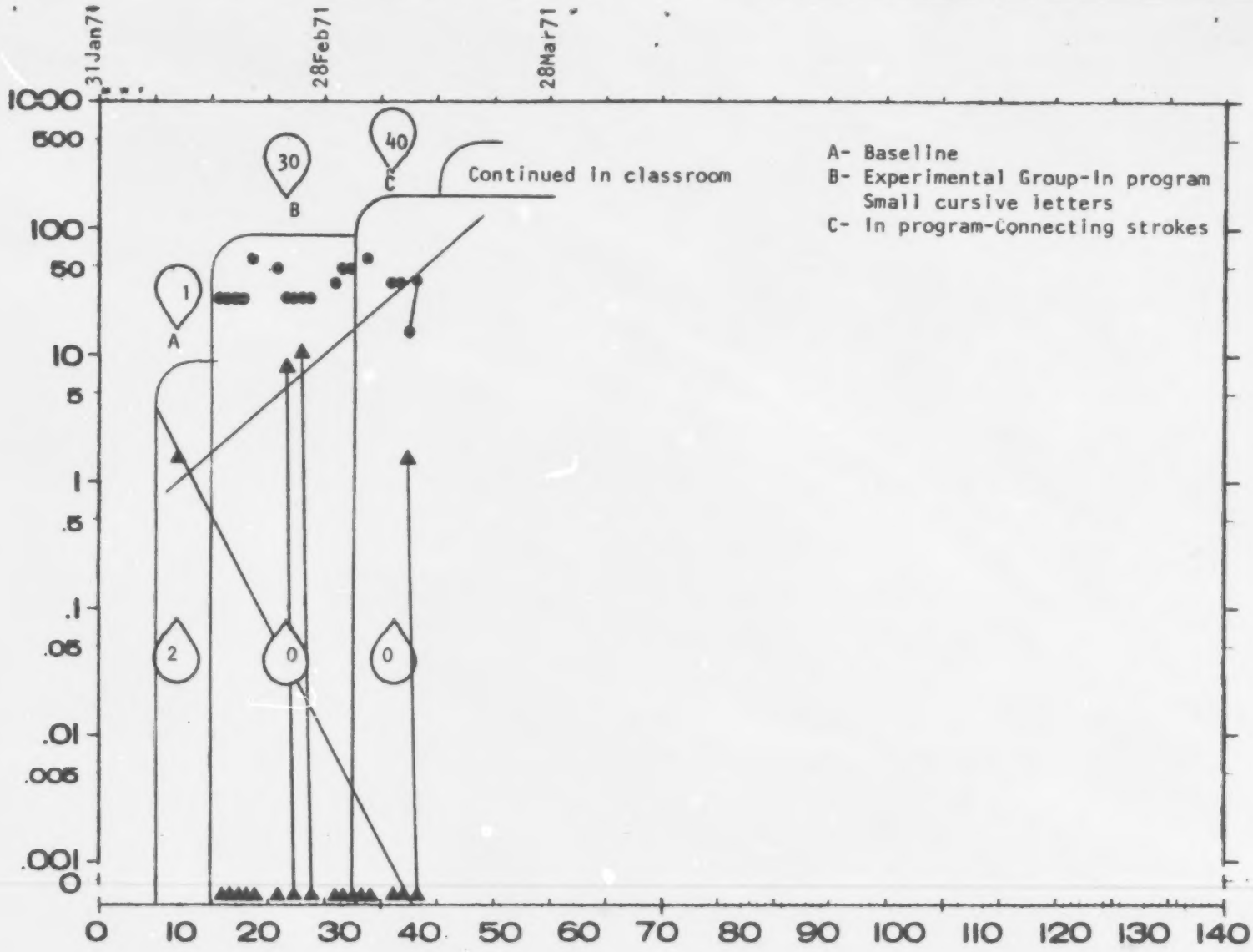
Phase B median data were:

Experimental Group	Control Group
Scott - correct 21 error 12	Lisa - correct 16 error 15
Cindy - correct 15 error 6	Marie - correct 12 error 9

The use of cues and phasing-out proved to be an effective way of increasing acceptable cursive penmanship.

Discussion

Pelander and Willis have been collecting data on this cursive penmanship program in order to establish a desired rate for good writing. The data show that the one-minute daily samples of cursive writing help the children to evaluate their own handwriting by allowing them to set the speed they need for good writing. As a result of this project, twenty-five teachers have begun using the cursive penmanship program and self-charting with their whole classrooms.



Lovitt
SUPERVISOR

Caufield
ADVISER

Pelander
MANAGER

Clover Park
AGENCY

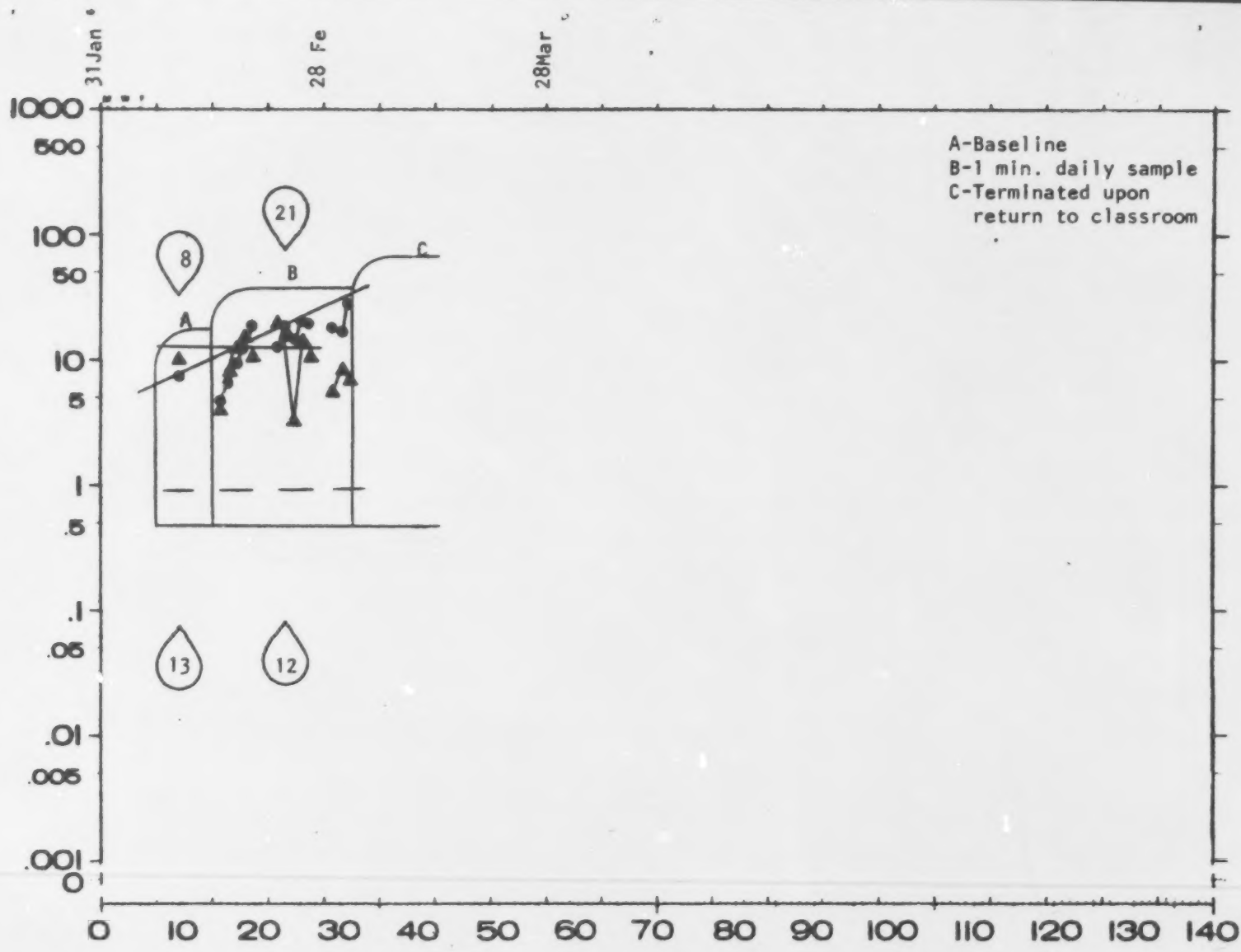
Scott
BEHAVER

8
AGE

3rd
LABEL

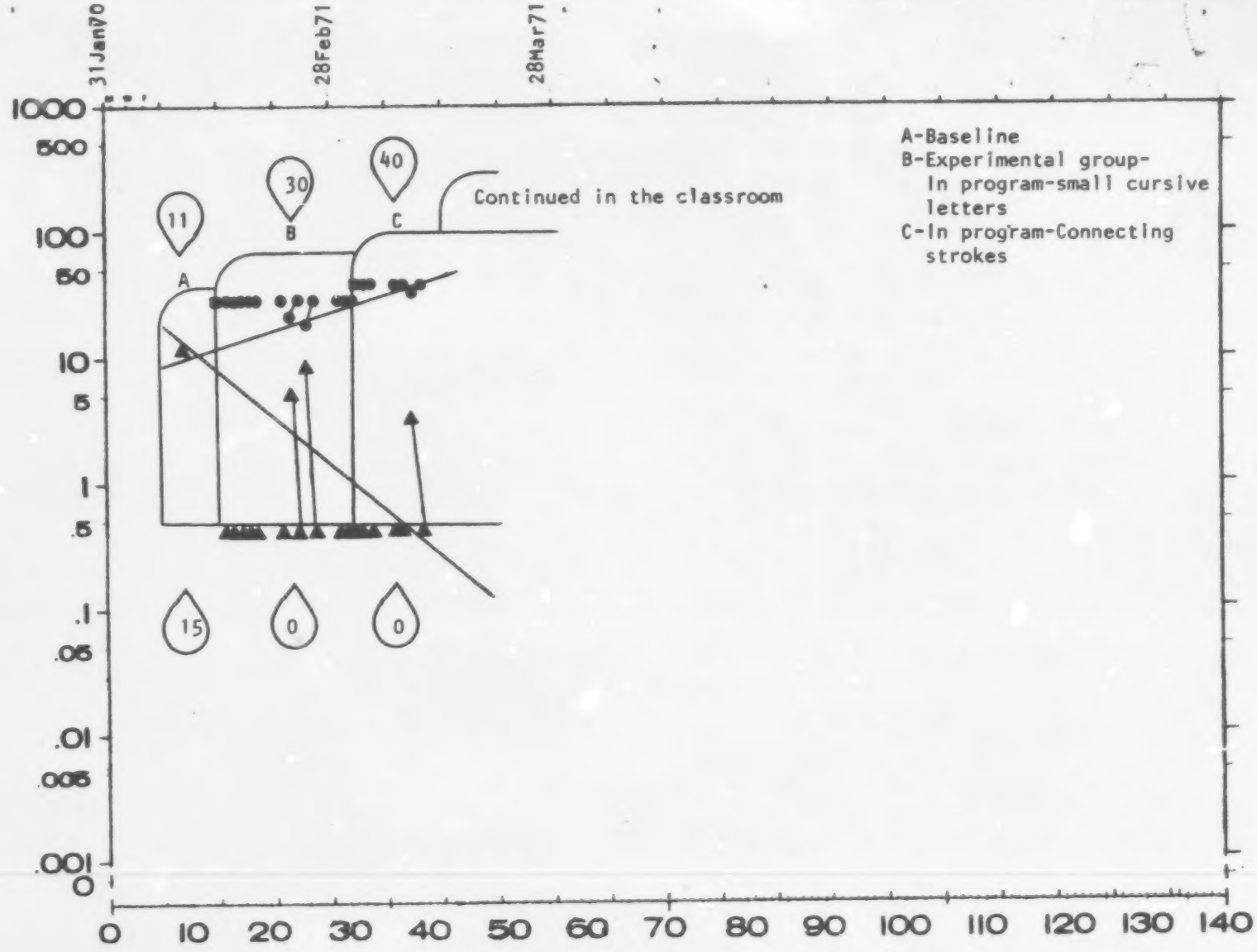
MOVEMENT
to write cursive more

Pelander
CHARTER



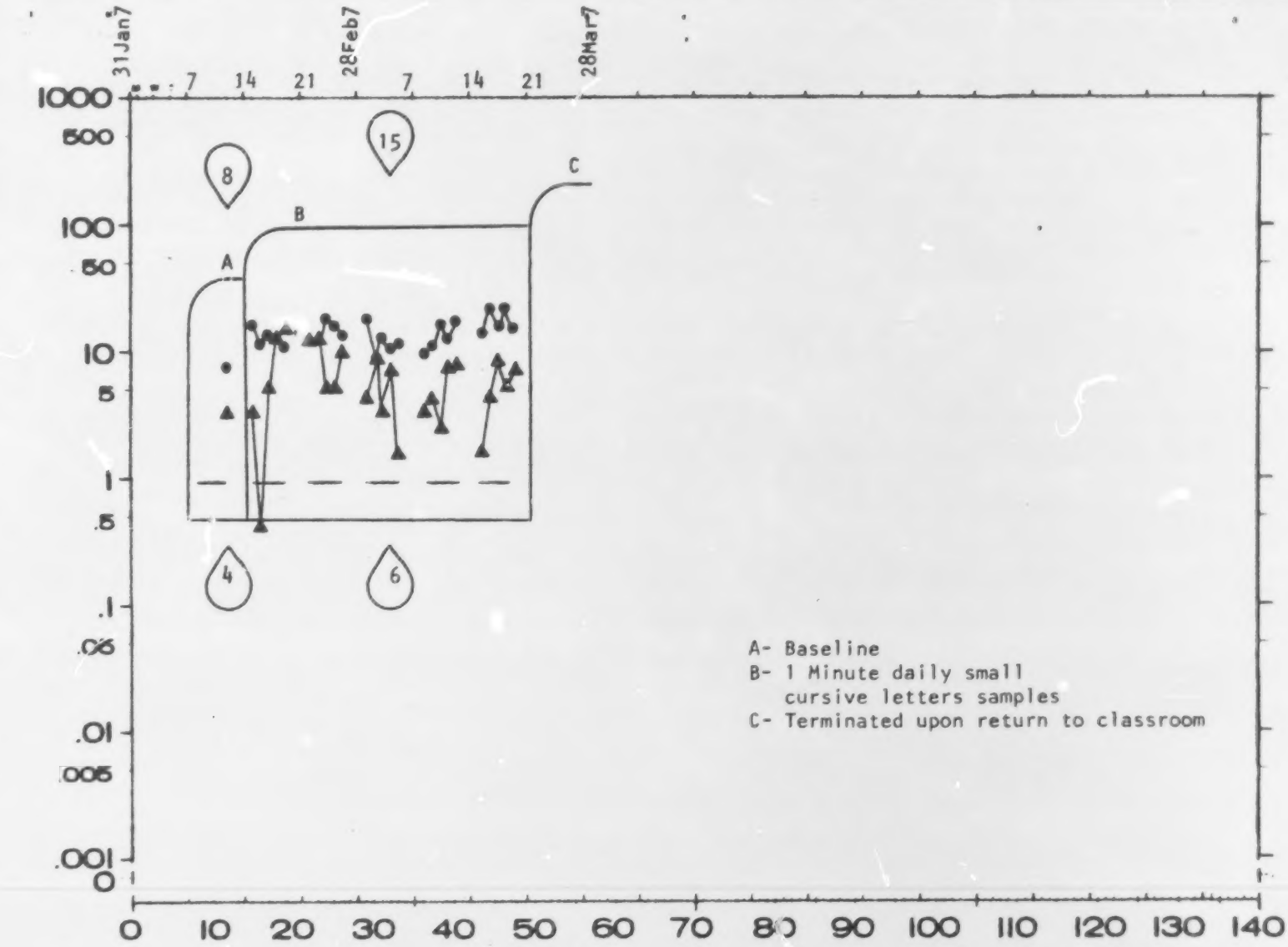
Lovitt SUPERVISOR | Caufield ADVISER | Pelander MANAGER | Scott BEHAVER | 8 AGE | 3rd LABEL | to write small cursive more MOVEMENT

DEPOSITOR | Clover Park AGENCY | Pelander CHARTER



Lovitt Caufield Pelander
SUPERVISOR ADVISER MANAGER
Clover Park
DEPOSITOR AGENCY

Scott 8 3rd to write cursive more
BEHAVER AGE LABEL MOVEMENT
Pelander
CHARTER



Lovitt
SUPERVISOR

Caufield
ADVISER

Willie'
MANAGER

Clover Park
AGENCY

Cindy
BEHAVER

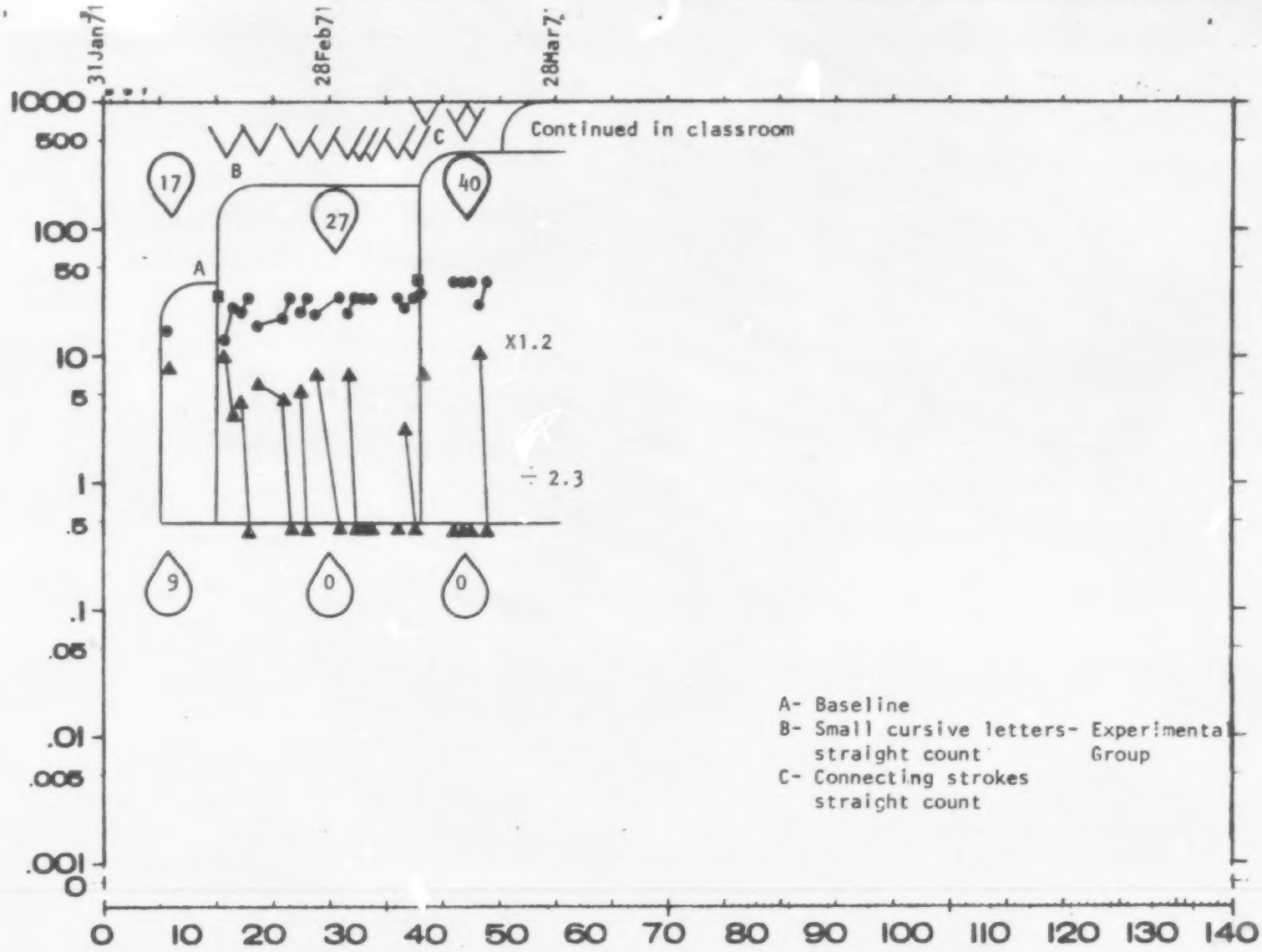
Willis
CHARTER

8
AGE

3rd
LABEL

MOVEMENT

to write cursive letters more

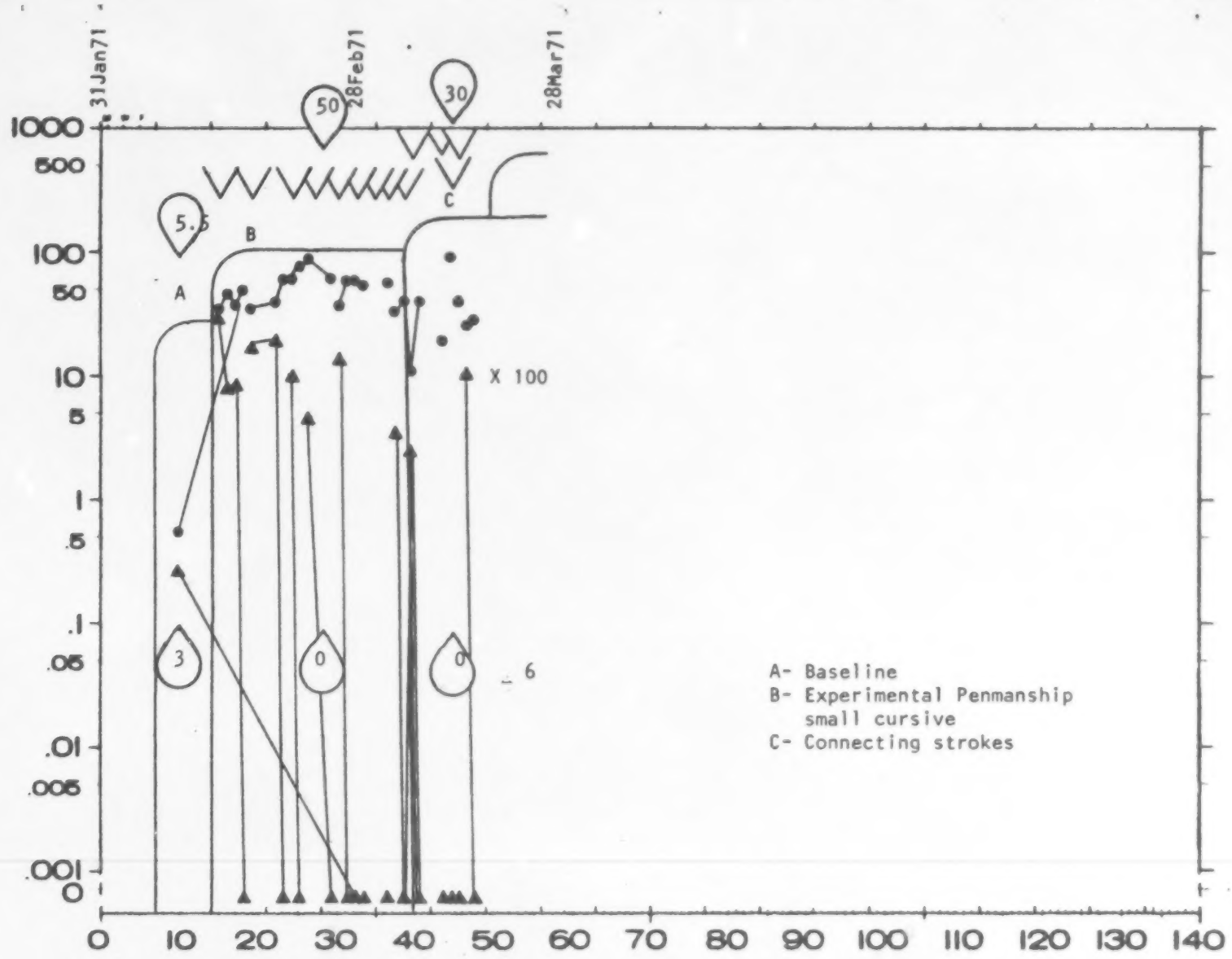


Lovitt SUPERVISOR | Caufield ADVISER | Willis MANAGER

Clover Park AGENCY

Cindy BEHAVER | 8 AGE | 3rd LABEL | MOVEMENT to write cursive more

Willis CHARTER



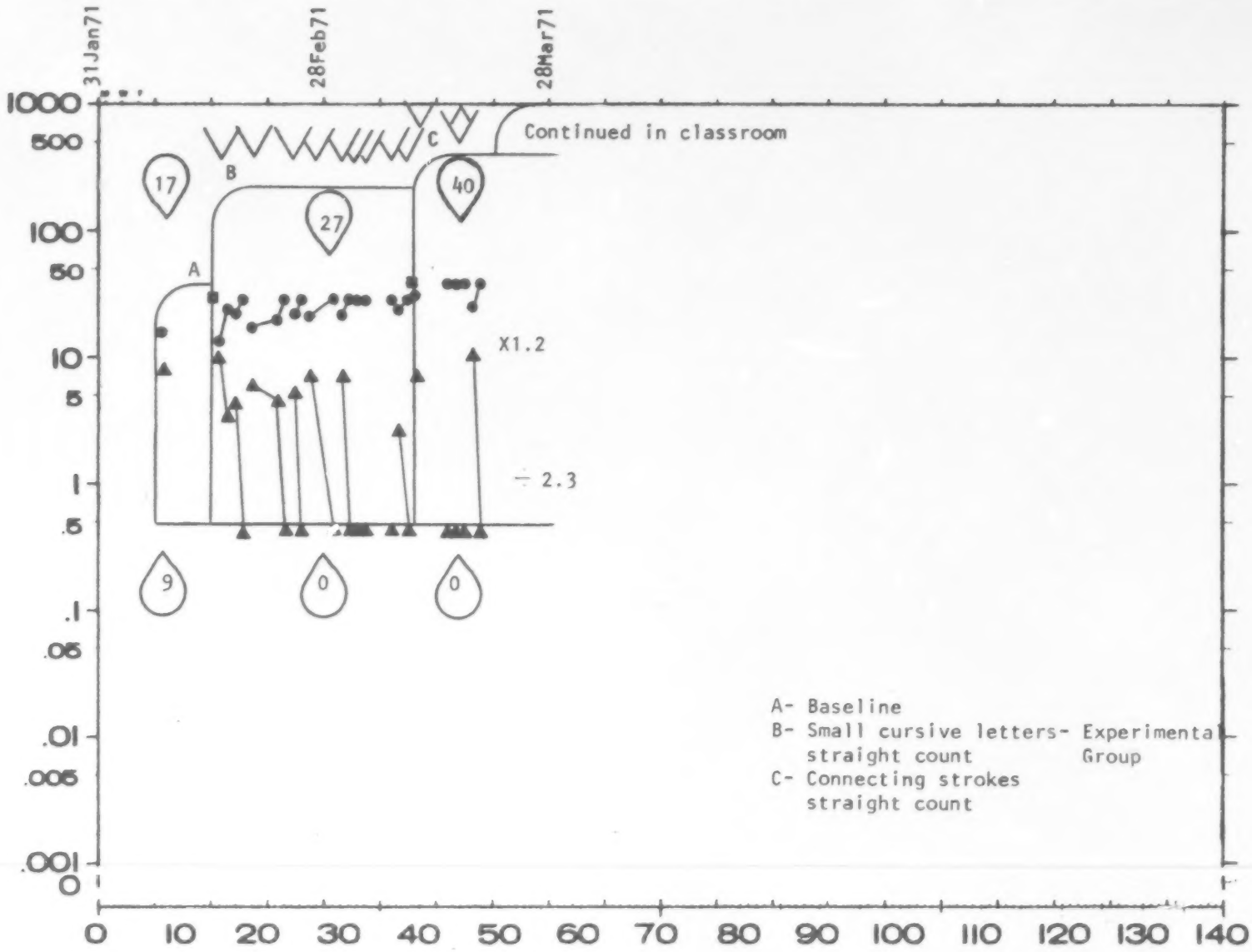
Lovitt SUPERVISOR | Caufield ADVISER | Willis MANAGER

Clover Park AGENCY

Cindy BEHAVER | 8 AGE | 3rd LABEL | MOVEMENT

to write cursive more

Willis CHARTER



Lovitt SUPERVISOR | Caufield ADVISER | Willis MANAGER

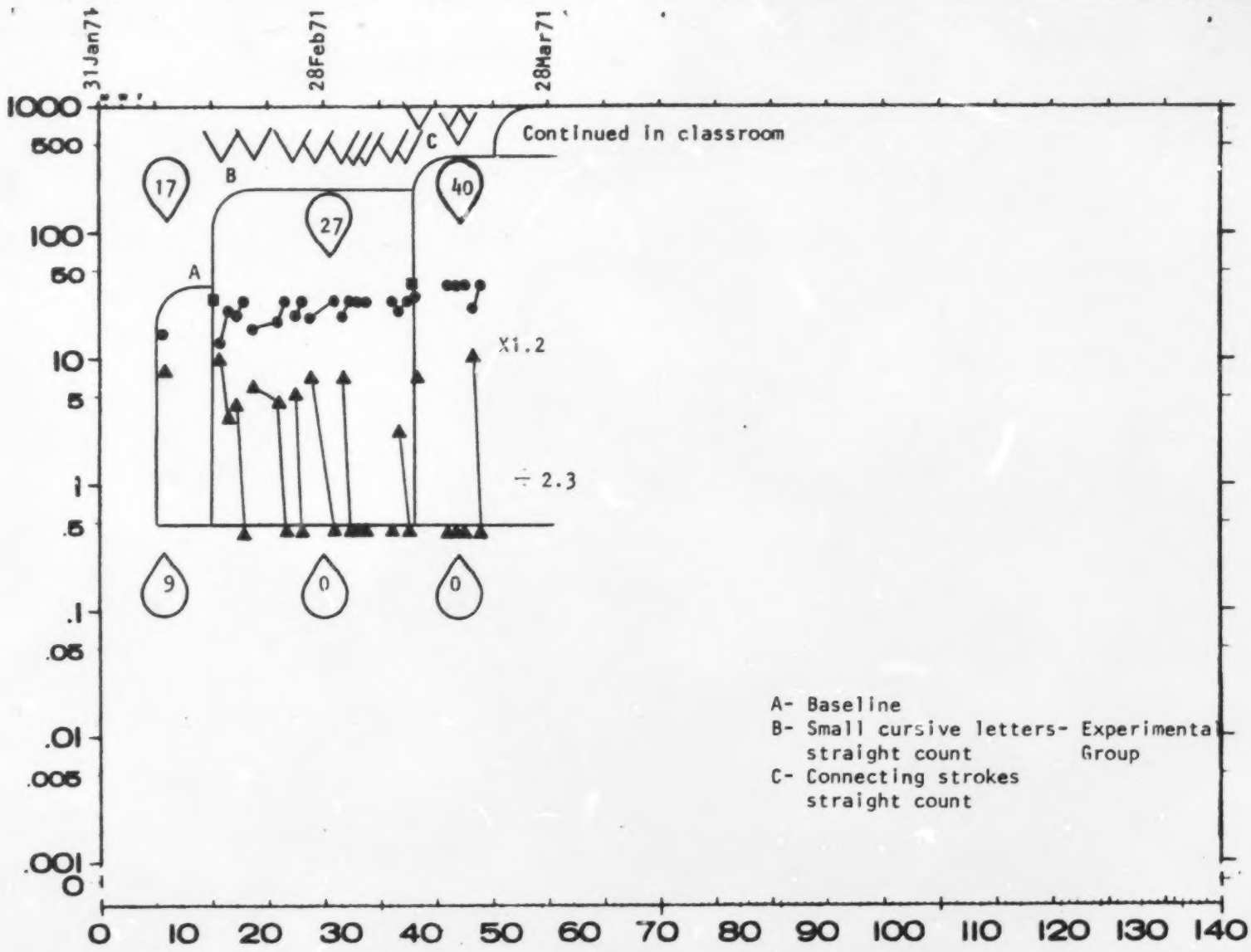
Clover Park AGENCY

Cindy BEHAVER | 8 AGE | 3rd LABEL | MOVEMENT to write cursive more

Willis CHARTER

91

92

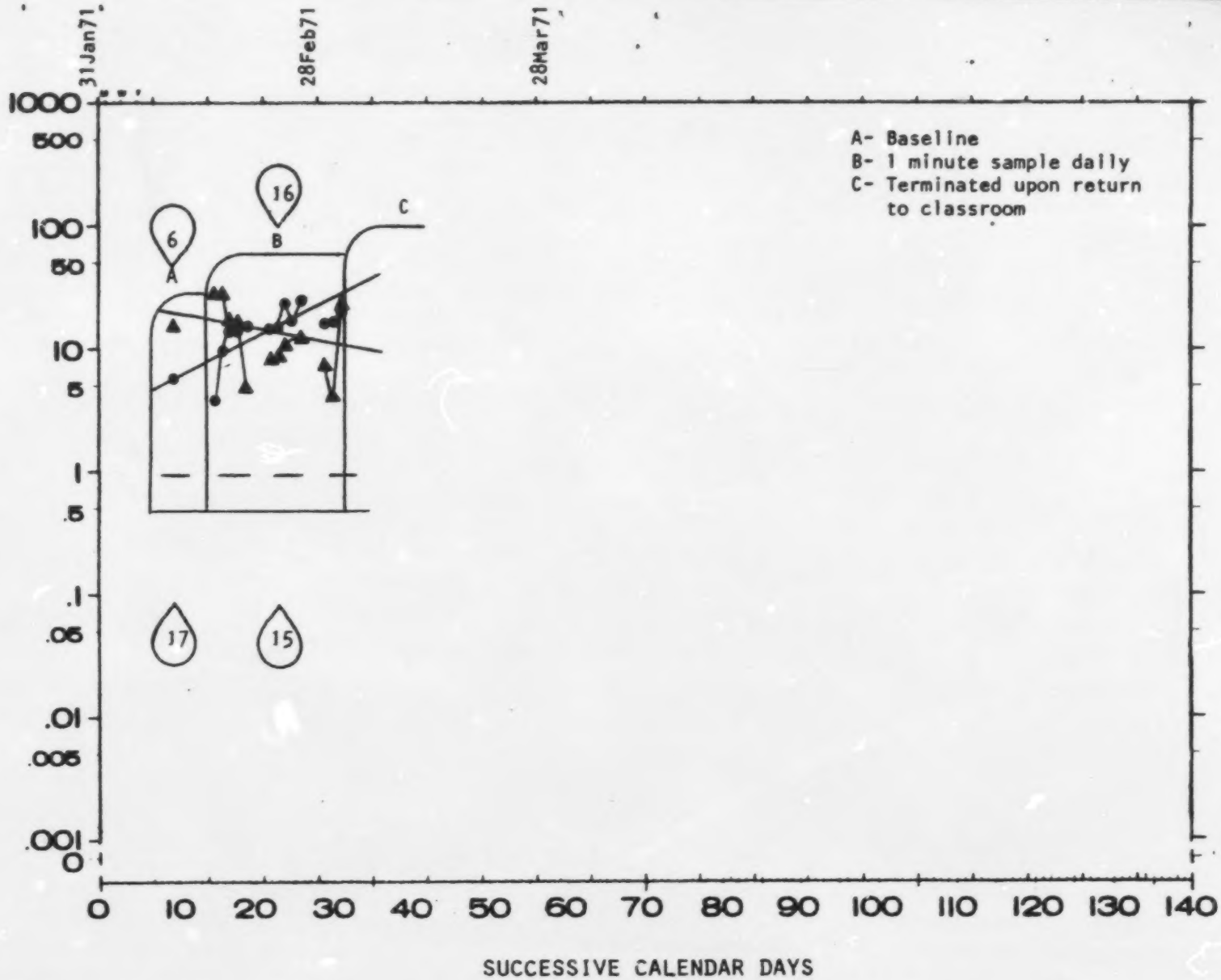


Lovitt SUPERVISOR | Caufield ADVISER | Willis MANAGER

Clover Park AGENCY

Cindy BEHAVER | 8 AGE | 3rd LABEL | MOVEMENT to write cursive more

Willis CHARTER



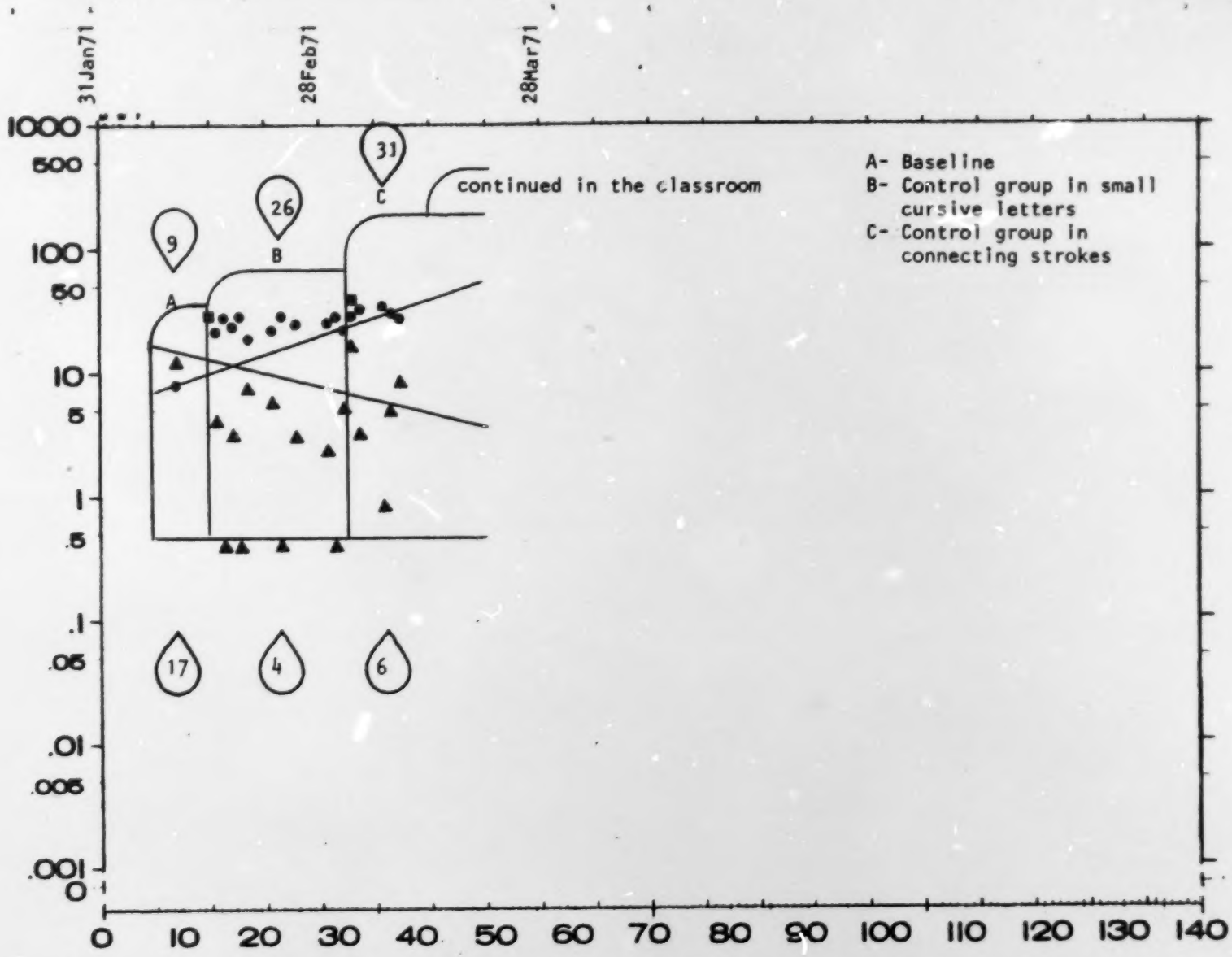
Lovitt SUPERVISOR | Caufield ADVISER | Pelander MANAGER

Clover Park AGENCY

Lisa BEHAVER | 8 AGE | 3rd LABEL | MOVEMENT

Pelander CHARTER

to write small cursive letters more



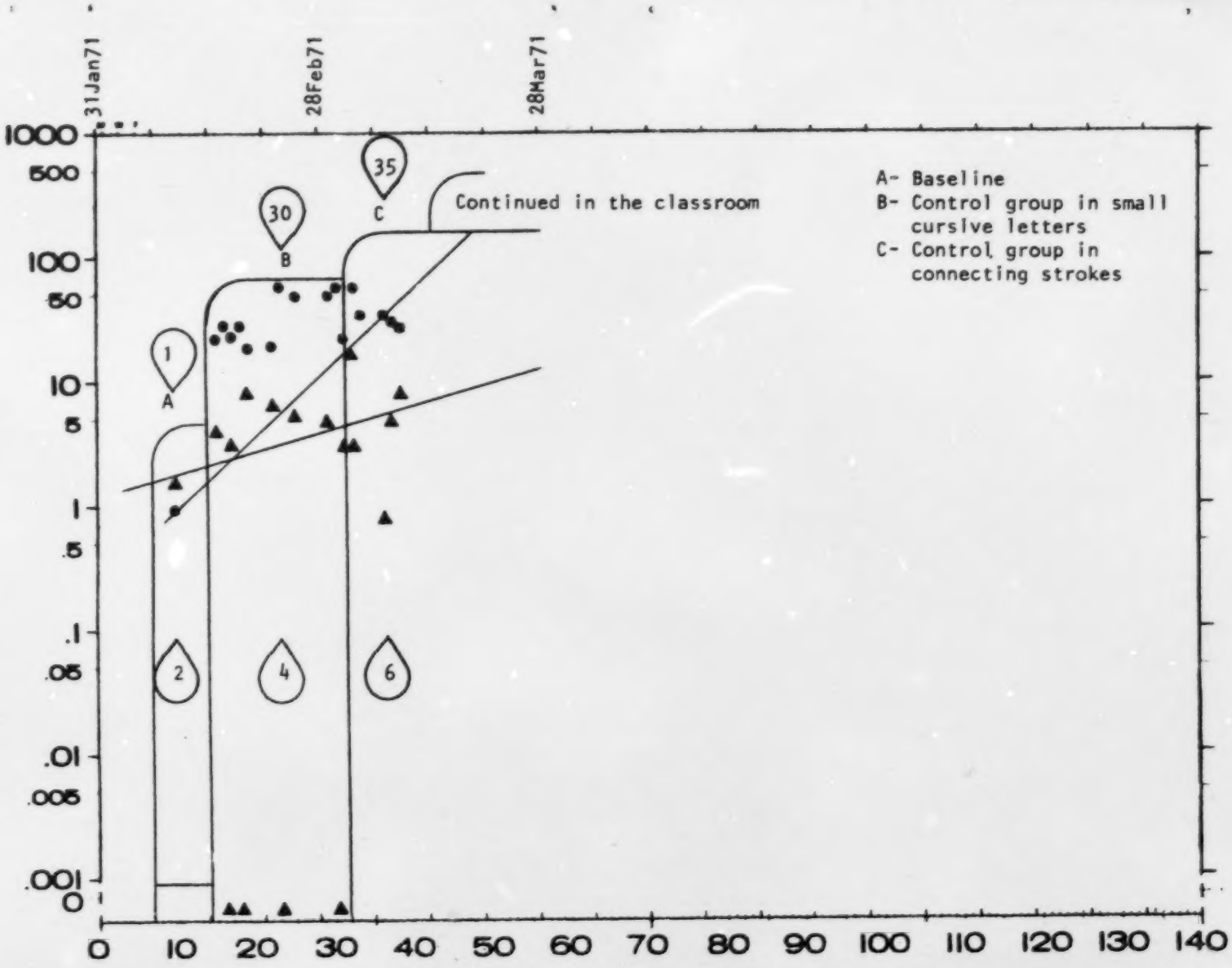
Lovitt SUPERVISOR | Caufield ADVISER | Pelander MANAGER

Clover Park AGENCY

Lisa BEHAVER | 8 AGE | 3rd LABEL | MOVEMENT

to write cursive more

Pelander CHARTER



Lovitt
SUPERVISOR

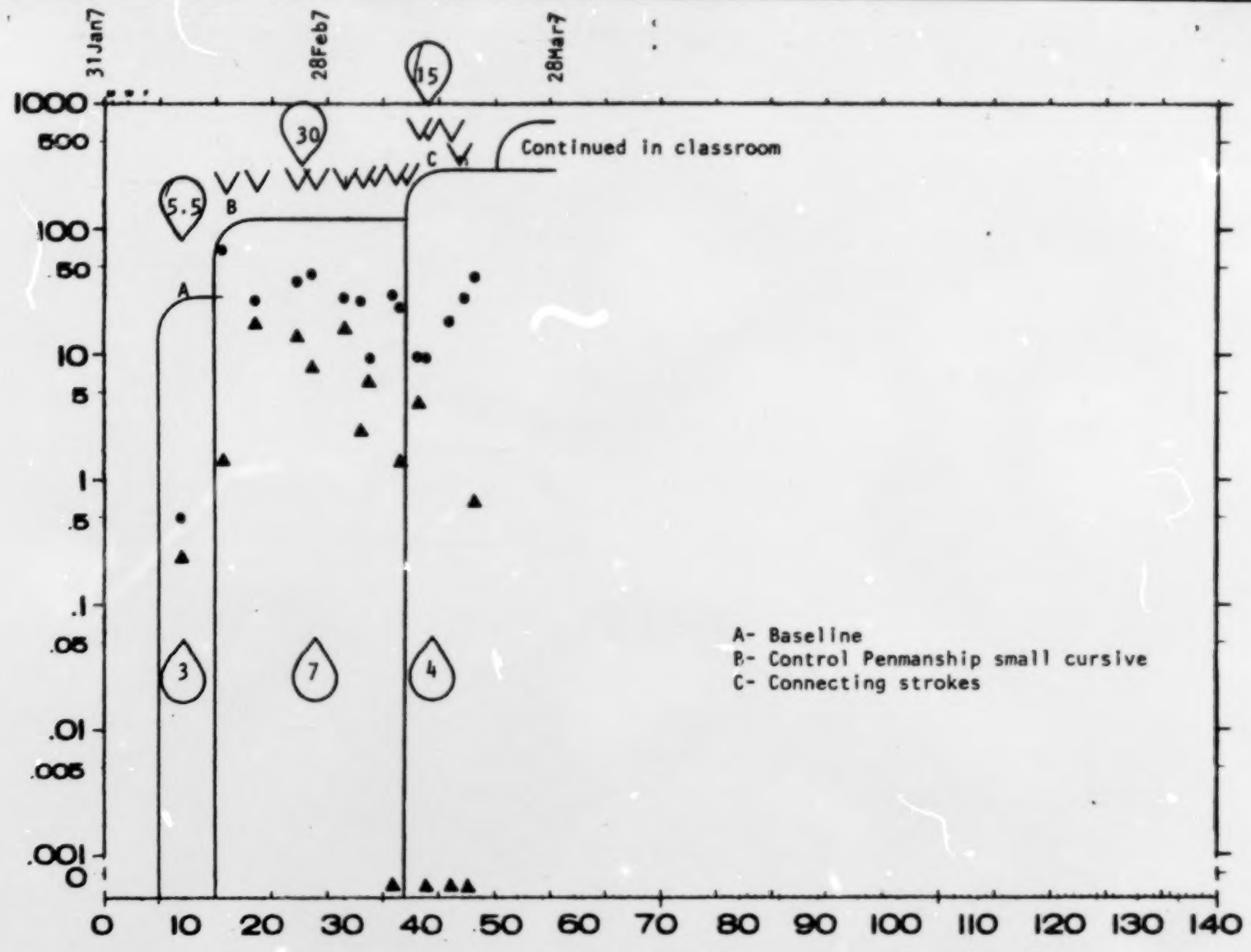
Caufield Pelander
ADVISER MANAGER

Clover Park
AGENCY

Lisa 8 3rd MOVEMENT
BEHAVER AGE LABEL

to write cursive more

Pelander
CHARTER



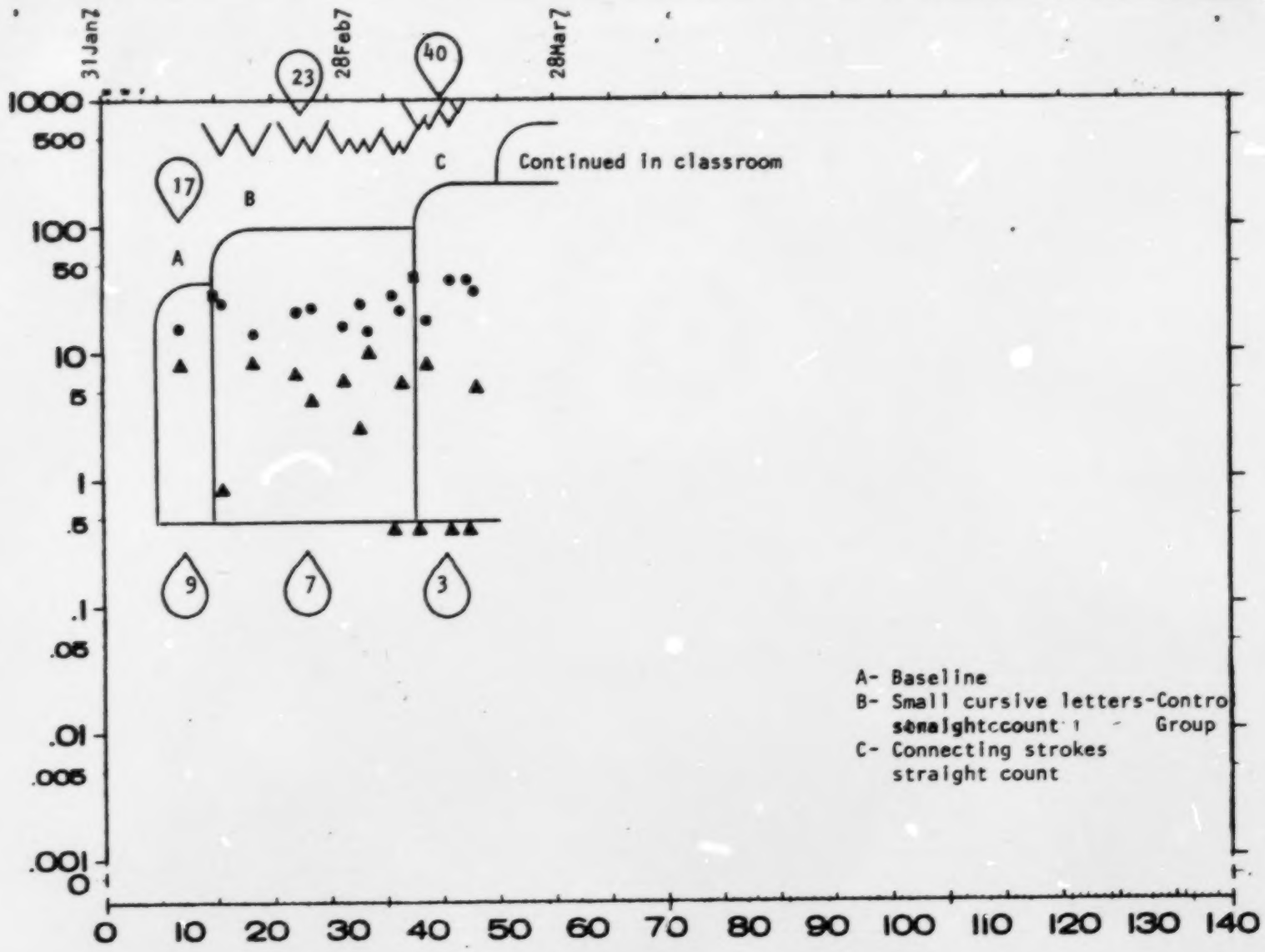
Lovitt SUPERVISOR | Caufield ADVISER | Willis MANAGER

Clover Park AGENCY

Marie BEHAVER | 9 AGE | 3rd LABEL | MOVEMENT

to write cursive more

Willis CHARTER



Lovitt
SUPERVISOR

Caufield
ADVISER

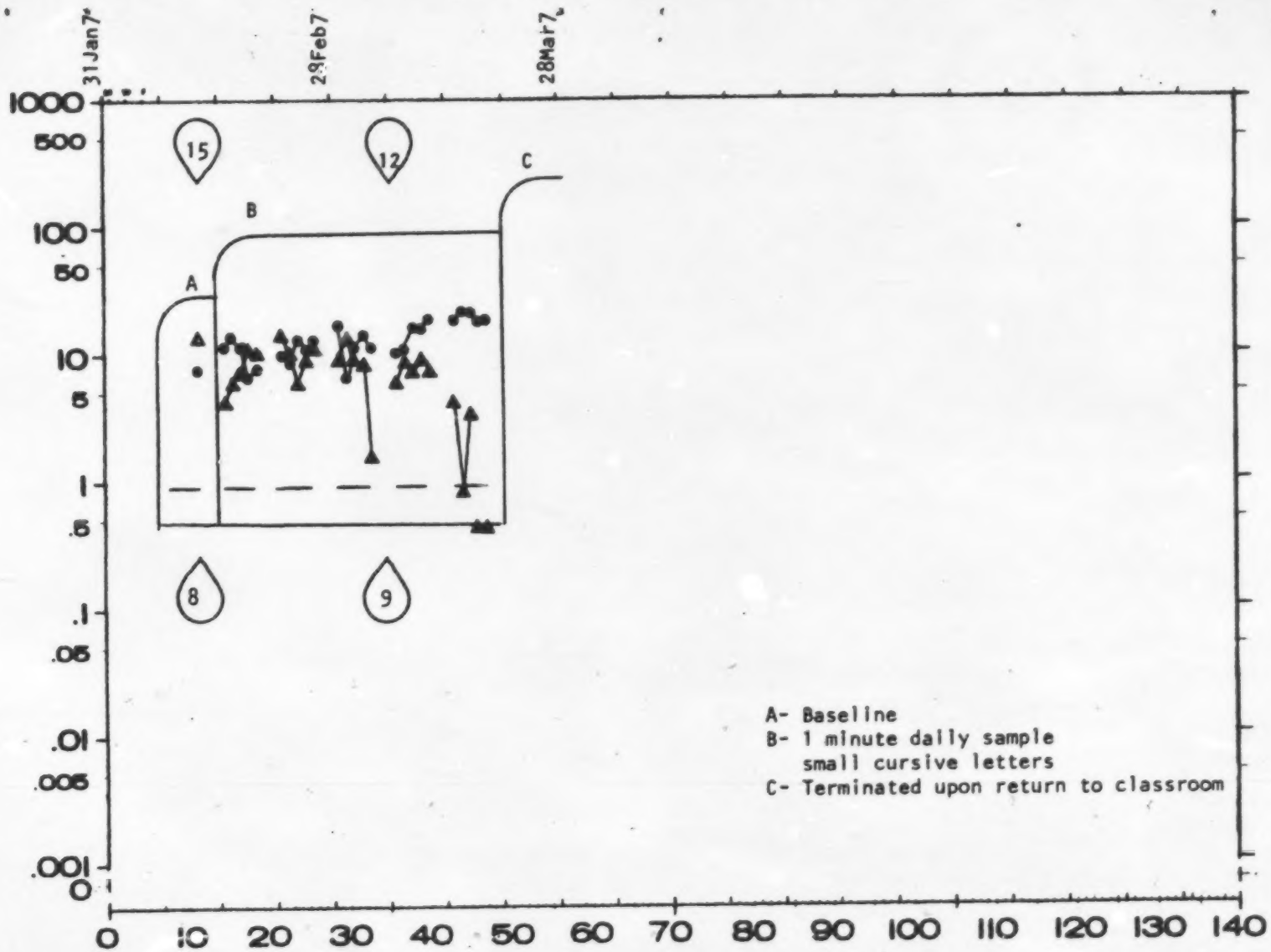
Willis
MANAGER

Clover Park
AGENCY

Marie | 9 | 3rd
BEHAVER | AGE | LABEL

MOVEMENT
to write cursive more

Willis
CHARTER



Lovitt
SUPERVISOR

Caufield
ADVISOR

Willis
MANAGER

Clover Park
AGENCY

Marie
BEHAVER

9
AGE

3rd
LABEL

MOVEMENT

to write cursive letters more

Willis
CHARTER

SAMPLE REFERRAL FORM

Teacher's Name_____ Date_____

Student's Name_____ Age_____ Grade_____

Please check appropriate behavior; circle R (Remedial) or E (Enrichment):

I. Reading

R E A. Oral Reading

R E B. Phonics

R E C. Vocabulary

R E D. Comprehension

R E E. Other _____

II. Arithmetic

R E A. Counting and Writing Numerals

R E B. Addition

R E C. Subtraction

R E D. Multiplication

R E E. Division

R E F. Other_____

III. Cursive Penmanship

R E A. Cursive Lette Identification

R E B. Letter Formation

R E C. Other_____

IV. Spelling

R E A. Classroom List

R E B. Dolch List

R E C. Other_____

V. Classroom Behavior

Yes No If yes, describe:_____

_____

VI. General Testing Check ( ) in front of area needed

_____A. New Student to School

_____B. Existing Student

_____C. Area Needed

_____1. Reading

_____2. Arithmetic

_____3. Spelling

_____4. Penmanship

_____

When do you want to meet with me for our weekly conference? Day (MTWThF)_____

Time_____

Contract Agreement: When_____ has _____

(student) (state goal)

he/she will return to the classroom.

Classroom Teacher_____ Day Started_____

Resource Teacher_____ Day Terminated_____

Discussion

The training program was effective in urban, suburban, and rural settings. The training sequence clearly can produce resource teachers who are able to maintain these children adequately. The trainees felt secure enough in their skills to train others--in some instances community volunteers, parents, and teachers' aides were able to initiate individual projects with students after preparation with the resource teacher.

The fact that the training program was successful is indicated by the following:

1. The trainees, who scored from 40 to 75 percent correct on pretest measures of their skills as precision teachers, virtually all scored 100 percent at the end of their training.
2. Because of services provided by our first group of trained resource teachers, two self-contained special education classrooms in the Clover Park district were closed; school district administrative personnel requested continuation of training services for a second generation of resource trainees the following year at district expense.*
3. By the end of the project's second year, first and second generation trainees had completed 926 academic and social interventions (academic: 883; social: 43). They had worked with 561 students whom they returned to regular classrooms, and with 113 teachers. In addition, they had completed 141 assessments of students who, they found, required no intervention.
4. All Clover Park trainees continue to function successfully as resource teachers during this school year (1971-72). The school district hopes to expand the program in the future.

*Now, two years later, a total of 5 self-contained classrooms in Clover Park have been closed, and a sixth will be closed this year.

The goal of the project as originally stated was to train teachers who would assist regular teachers in systematically instructing children in a regular classroom over the two-year period--children whose academic or social problems marked them as candidates for special education. The staff hoped to demonstrate the viability of the teacher-preparation program as one which would increase the effectiveness of any classroom teacher. This program differed from other teacher-preparation programs only in its emphasis on systematic instruction based on principles of behavior management and programmed learning, and in its use of the continuous measurement tools of precision teaching.

This project is an example of one of the best methods devised to date of meeting the needs of moderately handicapped children. Each resource teacher who worked with the children in our project saw an average of 41 children. This is more than four times the number of children that a teacher teaching in a self-contained classroom could manage in a year. It is also more than seven times the number of children our original proposal set as a management goal for all three school districts during both years of the project. Additionally, the resource teacher was a resource for classroom teachers, and, in many cases, even for "normal" children. This came about because the classroom teachers were often so pleased with the work their "problem children" were doing that they requested individualized programs for their other students on an informal basis. We feel, therefore, that not only the project goals were realized but that some serendipitous results were achieved also.

As a final note, we might consider the long-range economic implications of a program that maintains students in school and provides them with skills that will ultimately make them employable. It is estimated that a special education

for one individual for 12 years costs about $15,000.00. (Martin, 1972) Presumably that figure could be lowered if "special education" were provided by a resource teacher who can serve many children.

References

Bates, S., & Bates, D. F. "...and a child shall lead them": Stephanie's chart story. Teaching Exceptional Children, Spring, 1971, 3:3, 111-113.

Block, J. H., (Ed.) Mastery learning: Theory and practice. New York: Holt, Rinehart & Winston, 1971.

Cohen, M., Gentry, D., Hulten, W., & Martin, G. L. Measures of classroom performance. In N. G. Haring & A. H. Hayden (Eds.), The improvement of instruction. Seattle, Wash.: Special Child Publications, 1972. Pp. 268-310.

Deutsch, M. The role of social class in language development and cognition. American Journal of Orthopsychiatry, 1965, 25, 78-88.

Haring, N. G., & Phillips, E. L. Analysis and modification of classroom behavior. Englewood Cliffs, N. J.: Prentice-Hall, 1972.

Haring, N. G., Stern, G., & Cruikshank, W. M. Attitudes of educators toward exceptional children. Syracuse, N. Y.: Syracuse University Press, 1957.

Hayden, A. H., & Haring, N. G. The improvement of instruction through evaluation. In N. G. Haring & A. H. Hayden (Eds.), The improvement of instruction. Seattle, Washington: Special Child Publications, 1972. Pp. 432-452.

Kunzelmann, H. P., Cohen, M. A., Hulten, W. J., Martin, G. L., & Mingo, A. R. Precision teaching: An initial training sequence. Seattle, Wash.: Special Child Publications.

Lindsley, O. R. Precision teaching in perspective: An interview with Ogden R. Lindsley. Teaching Exceptional Children, Spring, 1971, 3:3, 114-119.

Mager, R. F. Preparing instructional objectives. Palo Alto, Calif.: Fearon Publishers, 1962.

Martin, E. W., Jr., Individualism and behaviorism as future trends in educating handicapped children. Exceptional Children, 1972, 38:7, 517-525.

Siegel, E. Special education in the regular classroom. New York: John Day, 1969.

Skinner, B. F. Beyond freedom and dignity. New York: Alfred A. Knopf, 1971.

Sparks, H. L., & Blackman, L. S. What is special about special education revisited: The mentally retarded. Exceptional Children, 1965, 31, 242-247.

State of Washington. A State plan to initiate, expand, and improve programs and projects for the education of handicapped children, under Title VI of the Elementary and Secondary Education Act of 1965, as amended. (Submitted to U. S. Office of Education by State Superintendent of Public Instruction, 1967.)

White, O. Working paper no. 1. The "split-middle": A "quickie" method of trend estimation. Eugene, Oregon: Regional Resource Center for Handicapped Children, College of Education, University of Oregon, March, 1971.